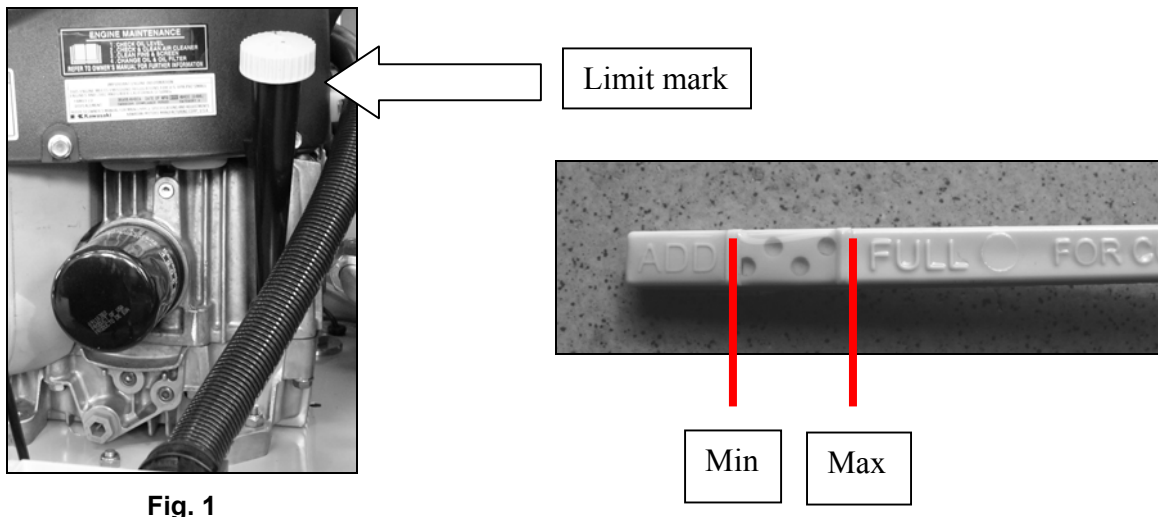


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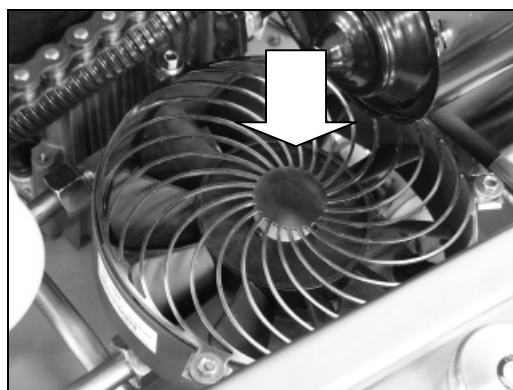
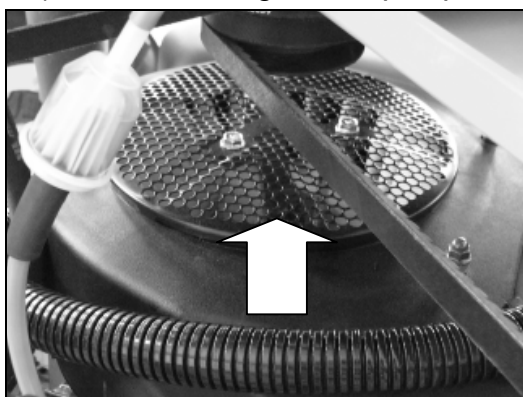
1 Spider Routine Maintenance

1.1 Daily:

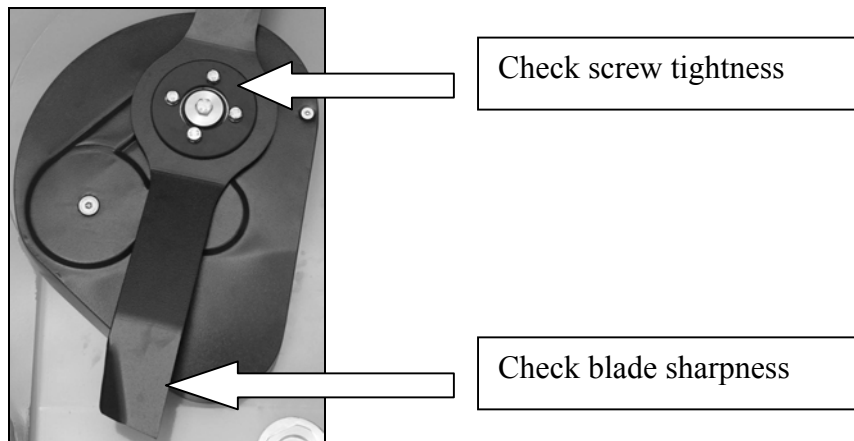
- a) Check the engine oil level



- b) Clean the engine and pump air cooling intake



- c) Check that the cutter blade is secure and check its sharpness and balance



- d) Lubricate the toothed segment and the guide bush of the cross welded piece (XINTEX – Slix)

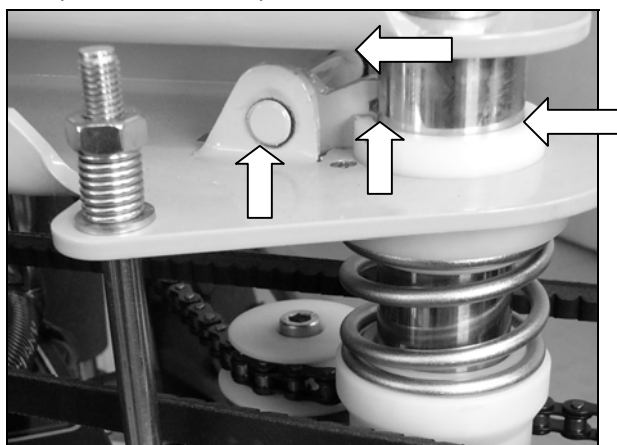


Fig. 5

1.2 After the first 8 hours:

- a) Change the engine oil
- see [Changing the engine oil filter](#)

1.3 After 25 hours:

- a) Clean the air cleaner foam element

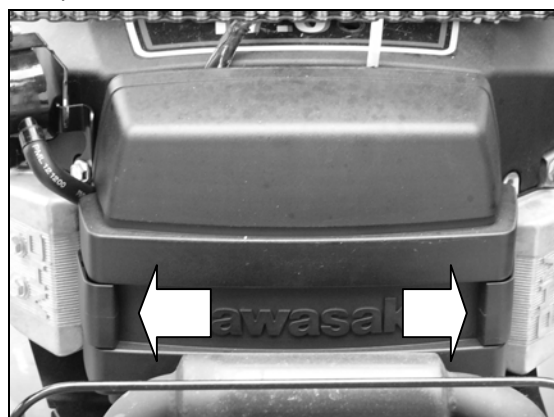


Fig. 6

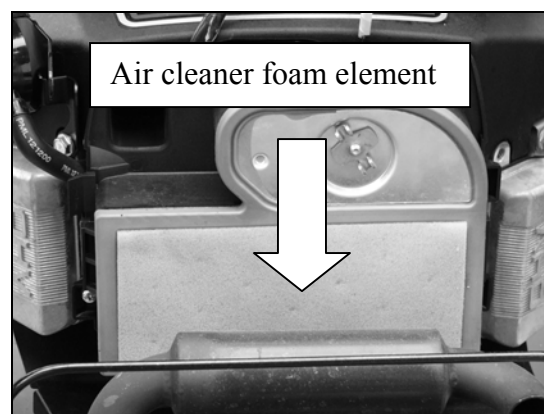
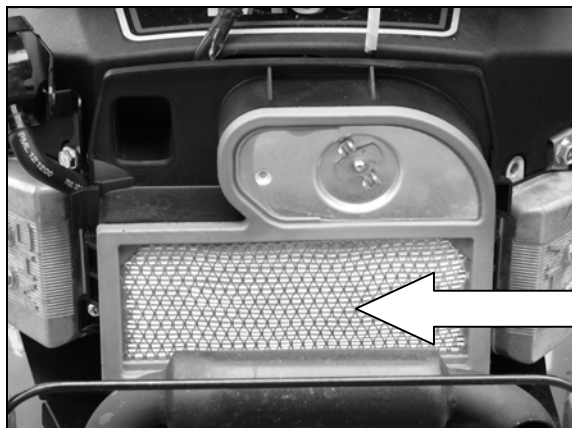


Fig. 7

1.4 After 50 hours:

- a) Clean the air cleaner paper element



Air cleaner paper element

Fig. 8

- b) Lubricate the roller chain of the steering



Fig. 9

- c) Tighten the roller chain of the steering

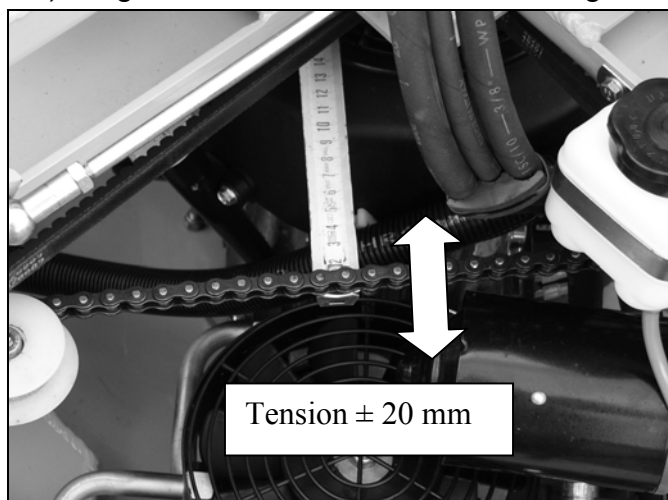


Fig. 10

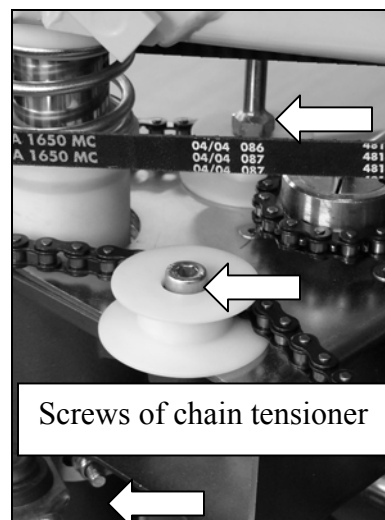


Fig. 11

- d) Check the hydraulic oil level

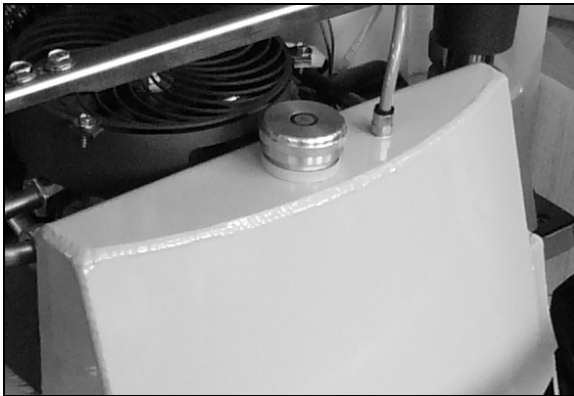


Fig. 12

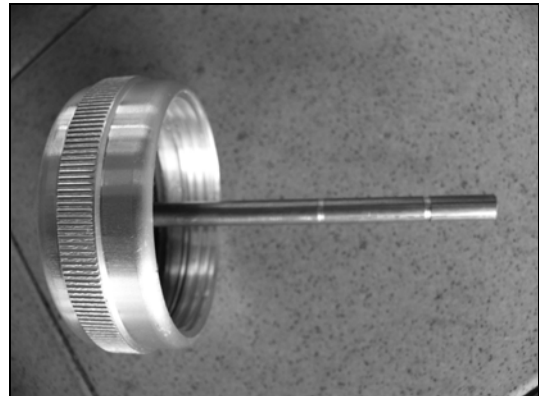


Fig. 13

1.5 After 100 hours:

- a) Change the engine oil
- b) Clean the spark plugs
- c) Clean the engine cooling fins

1.6 After 200 hours:

- a) Change the engine oil filter

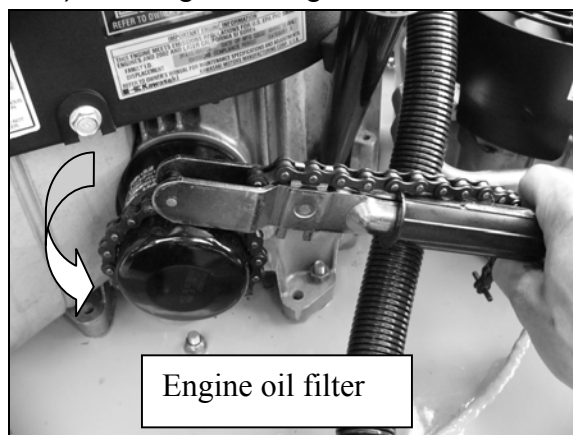
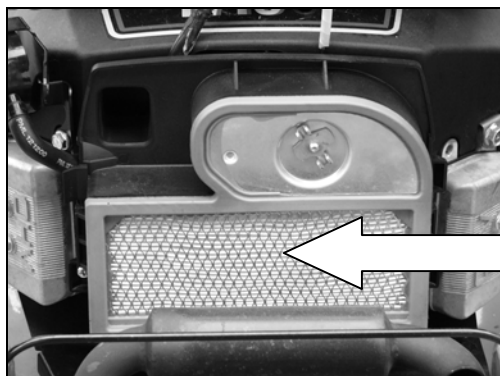


Fig. 14

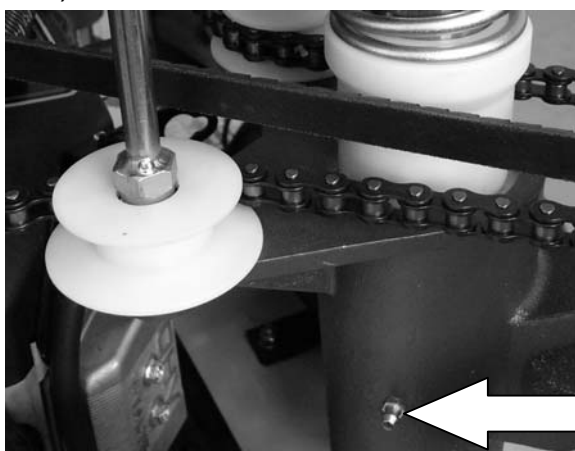
b) Change the air cleaner paper element 2 (Fig. 8)



Air cleaner paper element

Fig. 15

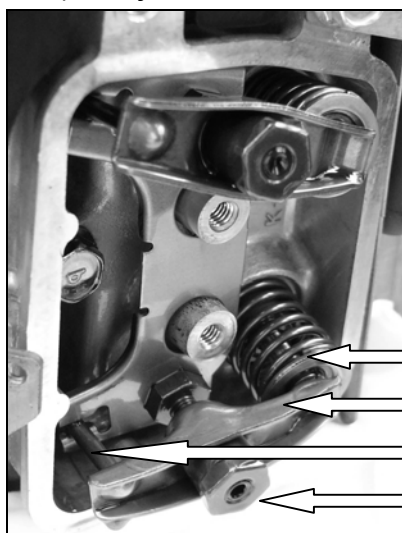
c) Lubricate the wheel rims 2 with XINTEX - Super Impact



Grease nipple

Fig. 16

d) Adjust the valve clearance



Valve clearance

Intake - 0.10 – 0.15 mm

Exhaust - 0.10 – 0.15 mm

Adjustment:

Turn the adjusting screw to adjust the clearance between the valve and beam (when the piston is at top of the compression lift)

Valve
Rod
Lifting rod
Adjusting screw

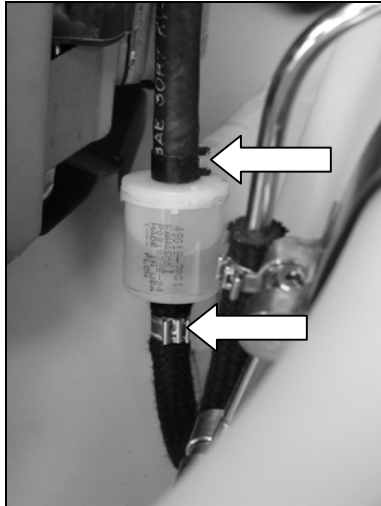
Fig. 17

1.7 Seasonally:

- a) Change the hydraulic oil

See [changing the hydraulic oil filter](#)

- b) Change the fuel filter



2 Spider Service Manual

2.1 Changing the engine oil filter

- Thoroughly clean the area around the oil filter and the filler neck
- Drain the oil from the crankcase through the filler neck (or with the drain bolt when the machine is tilted) CAUTION! The oil must not run under the engine (or into the clutch area to prevent the belts from slipping)

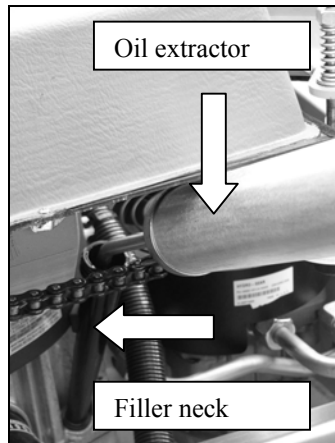


Fig. 19



Fig. 18

- Disassemble and change the oil filter (lubricate the filter seal with oil during assembly)
- Top up the engine oil with roughly 1.5 l (1.7 l when changing the oil filter)
- Check the oil level with the dipstick (fill to the upper limit for better slope access)

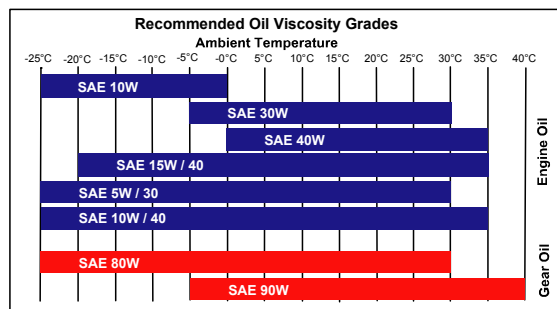


Fig. 20

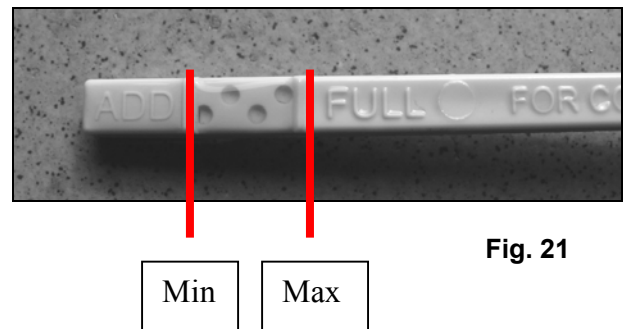


Fig. 21

Recommended oils:

- SF, SG, SH, SJ, API Classification
- Oil viscosity (see Table 1)
- Multigrade oils (5W-20, 10W-30, 10W-40) increase oil consumption. When these are used, check the oil level more frequently.

2.2 Changing the hydraulic oil filter

- Drain the oil from the hydraulic tank through the filler neck
- Tilt the machine on the side of the hydraulic tank
- Clean the underside of the machine thoroughly (CAUTION! Dirt must not get into the hydraulic tank!)
- Loosen the hydraulic filter cap (spanner size 63 mm)

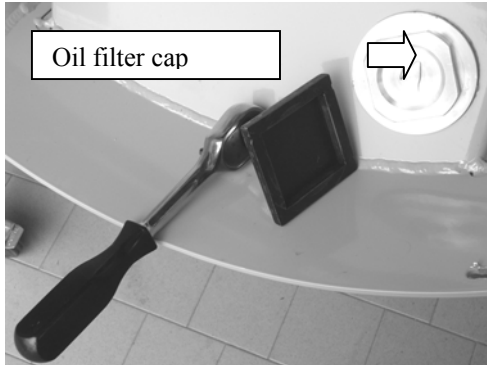


Fig. 22

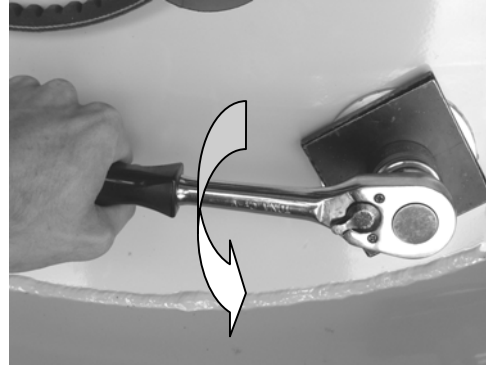


Fig. 23

- Remove and change the MANN FILTER H 601/4 (CAUTION! Ensure that the seal rings are properly positioned!)
- Lubricate the rings lightly with oil to ensure good tightening and sealing

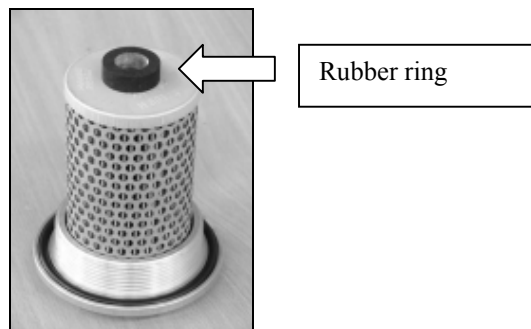


Fig. 24

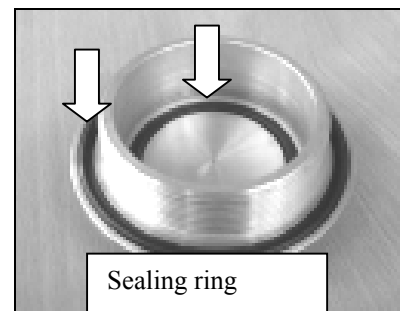


Fig. 25

- Fill up with OHM 32 hydraulic oil (approx. 6.5 l)
 - Start the engine and by travelling backwards and forwards bleed the hydraulic system (the wheels must rotate freely)
 - Top up the oil so that the level is between the gauge Min and Max marks
 - Run the machine to warm up the oil to operating temperature; check the tightness of the oil filter cap and the tank cap
 - If the expansion tank overfills, drain some of the oil
- CAUTION!** When the hydraulic oil warms up the oil level rises up to the neck of the hydraulic tank!
Top up to the line on the dipstick only when the oil is cold!

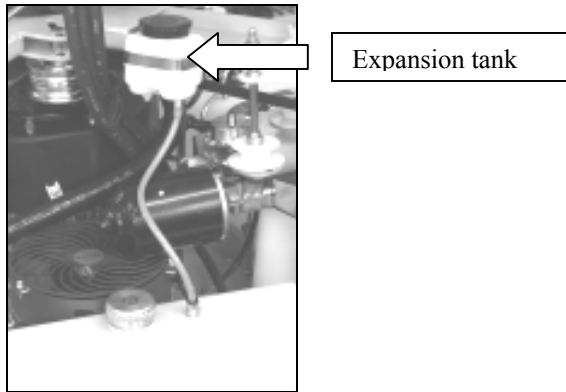


Fig. 26

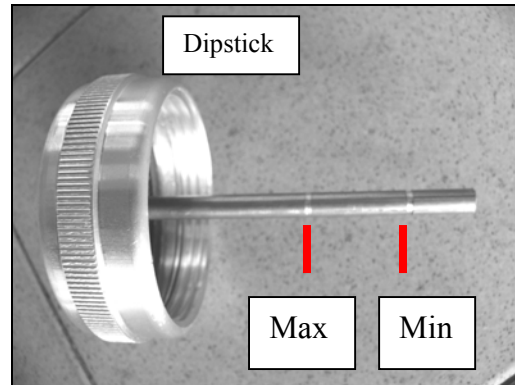


Fig. 27

2.3 Changing the hydraulic pump

- Drain the oil from the hydraulic tank

Disassembly:

- Disassemble the stabiliser on the left-hand side (for better access to the pump)
- Remove the fan grille
- Remove the fan
- Remove the fan cover (3 screws on pump head)

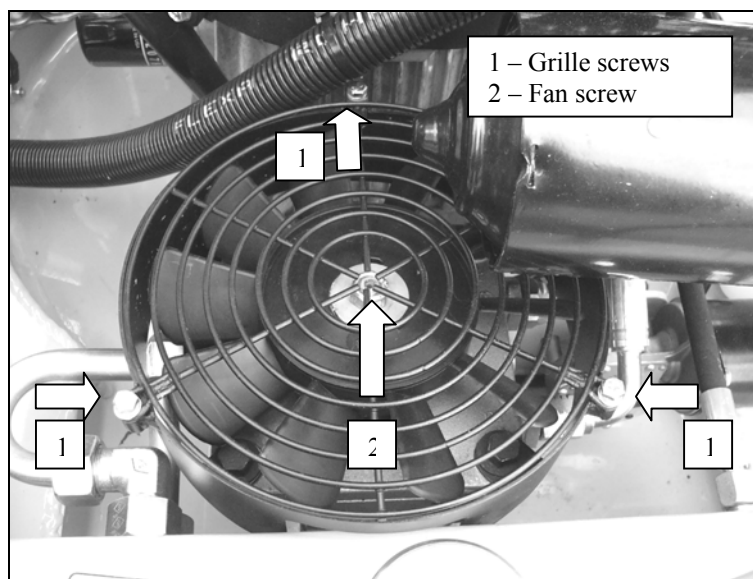


Fig. 28

- Tighten the screws back into the pump head
- Disconnect the hydraulic pipe A (shorter) – loosen the nuts 2 and 3 simultaneously, then nut 4
- Disconnect the hydraulic pipe B (longer) – loosen the nut 5, then nuts 6 and 7 simultaneously
- Disconnect the hydraulic hoses
- CAUTION! The oil must not get into the frame or clutch area!
- Disconnect the pump operating rod

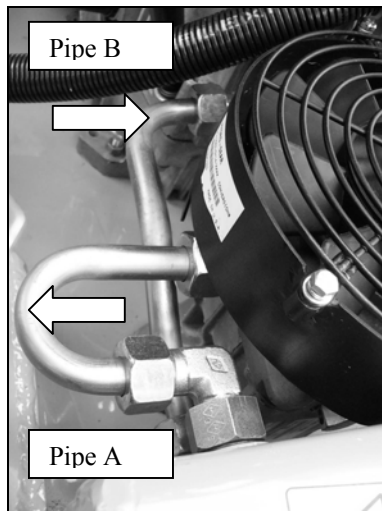


Fig. 29

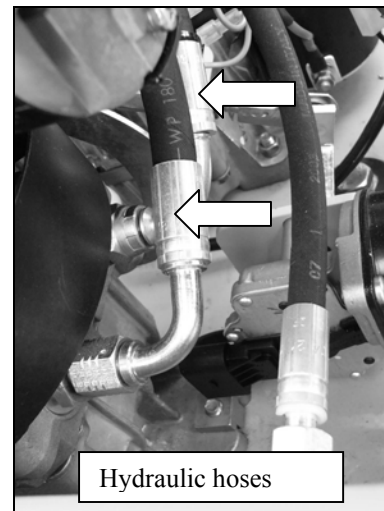


Fig. 30

From the underside of the machine:

- Remove the belt from the pump pulley (see [changing the pump drive belt](#))
- Disassemble the pump pulley (CAUTION! Remove the retaining bolt from the side of the pulley!)
- Remove the hydraulic pump

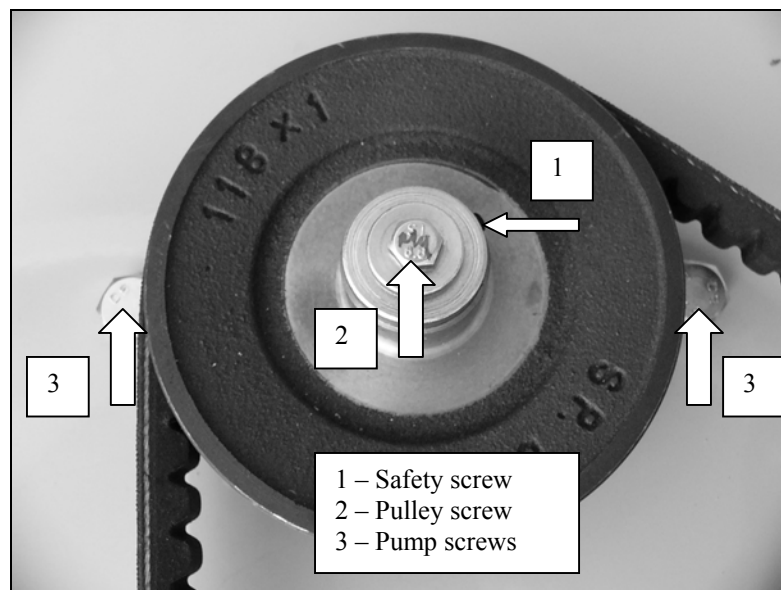


Fig. 31

Assembly: (Reverse procedure)

- Use an adhesive on the bolt to the pump shaft (i.e. LOCTITE 243)
- Seal the pump contact surface and the bolt heads with silicone sealant

Note

- When changing the pump add 0.5 l (approx.) of hydraulic oil
- After starting the engine, gently increase the running speed (air in the system – increased noise of hydraulics for about a minute)

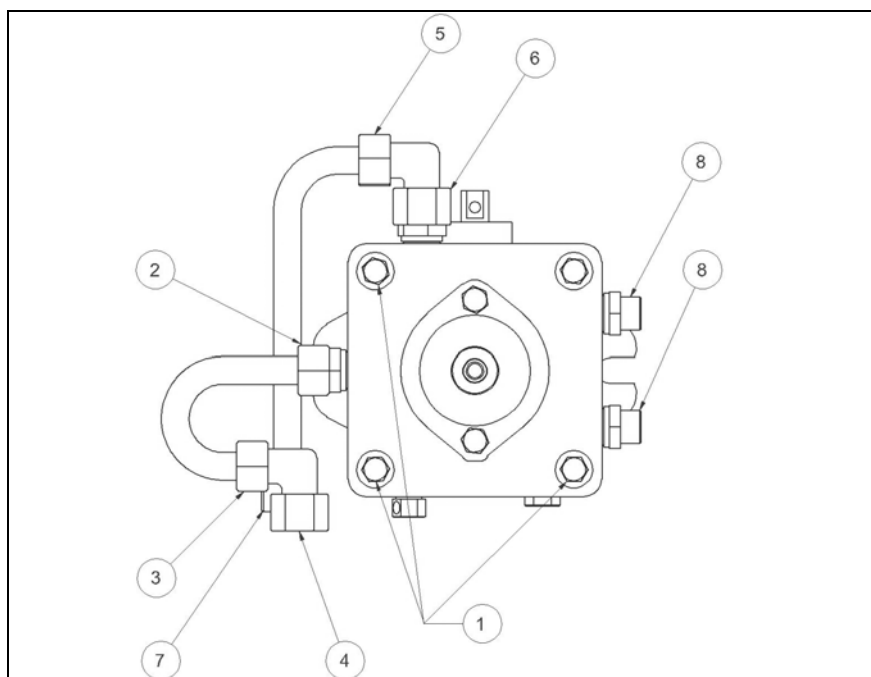


Fig. 32

2.4 Changing the hydraulic drive

Disassembly:

- Disconnect the hydraulic drive hose (CAUTION! Do not allow the oil to come into contact with the V-belts!)
- Remove the expansion tank
- Remove the control unit
- Disconnect the controls bracket from the support and disconnect the DC electric motor (Fig. 34)
- Remove the support and cross welded piece (see [changing the travel belts](#))
- Remove the pulley and hydraulic drive from the cross welded piece (Fig. 32)

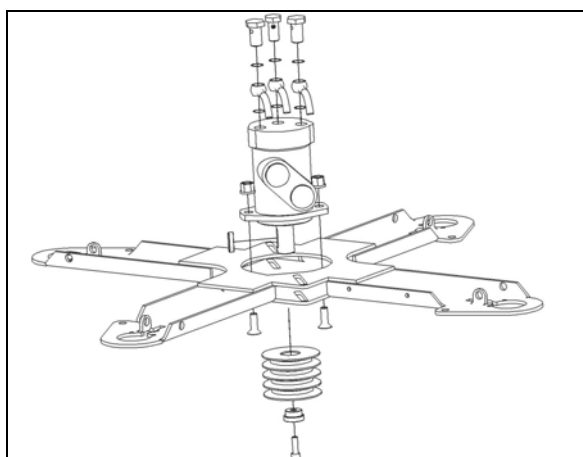


Fig. 33

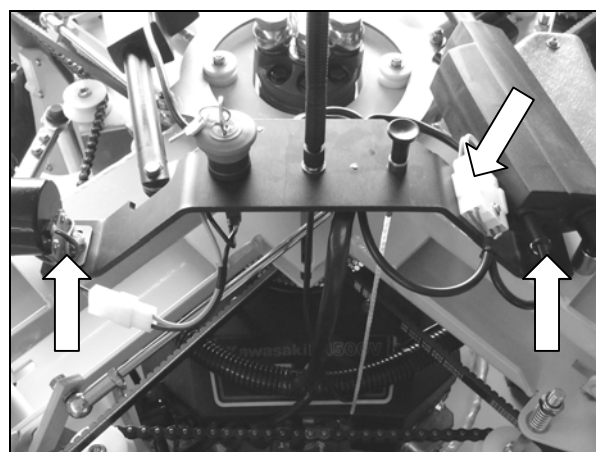


Fig. 34

Assembly: (Reverse procedure)

- Seal the hydraulic drive and screws with silicone sealant
- Seal the bolt in the pulley shaft (i.e. LOCTITE 243)
- Tighten the bolts of the hydraulic drive pressure hoses to 95 Nm
- Tighten the overflow hose bolt to 50 Nm
- CAUTION! Ensure the correct positioning of the washers!
- After starting the engine, lightly increase the running speed (air in the system – increased noise of hydraulics for about a minute)

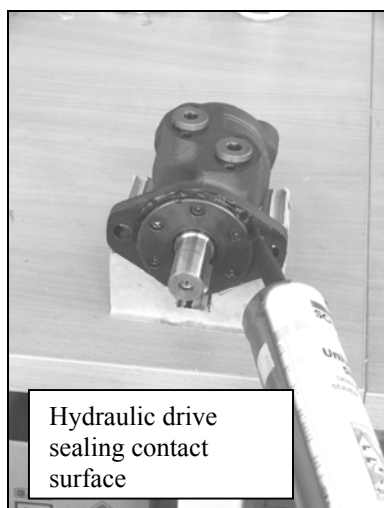


Fig. 35

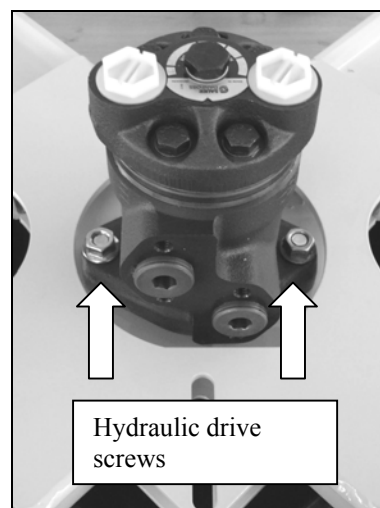


Fig. 36

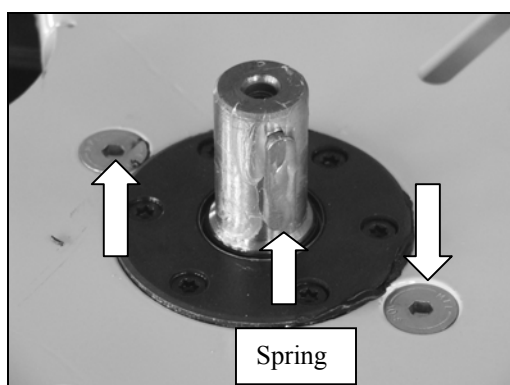


Fig. 37

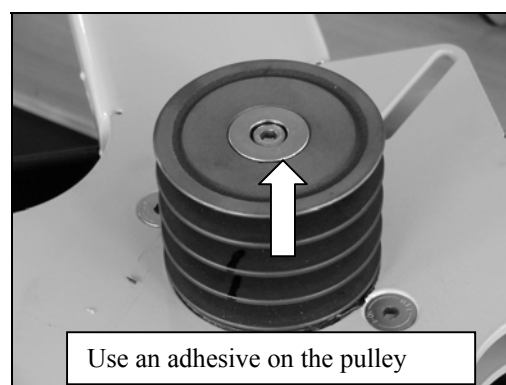


Fig. 38

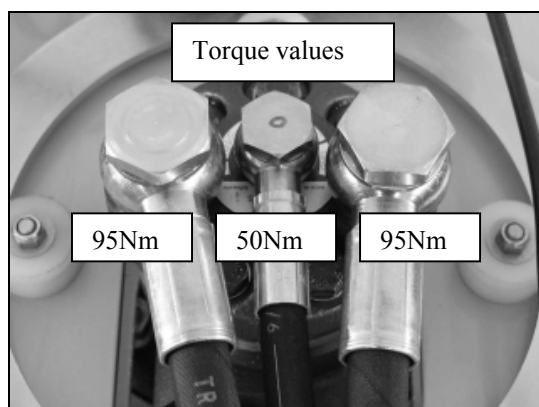


Fig. 39

2.5 Changing the blade drive belt

- Lift the machine or tilt it on the side of the hydraulic tank

Disassembly:

- Remove the cutter blade and clutch cover
- Loosen the nut securing the spring and release the tension on the belts
- Pull off the belt

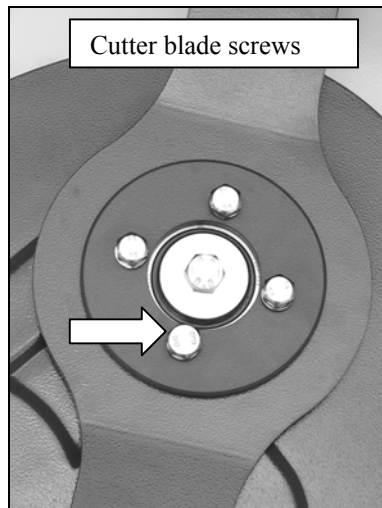


Fig. 40

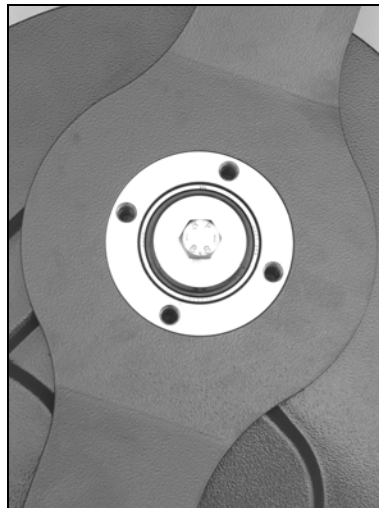


Fig. 41

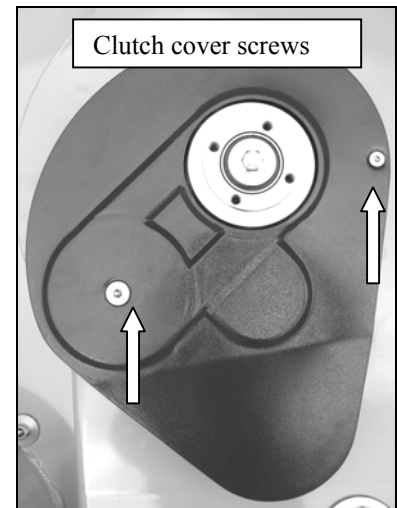


Fig. 42

Assembly: (Reverse procedure)

- Replace the B 750 GOODYEAR belt
- Adjust the clearance between the spring and the locknut
- Use an adhesive on the clutch cover bolts
- Seal the cover with sealant to prevent the infiltration of dirt and dampness

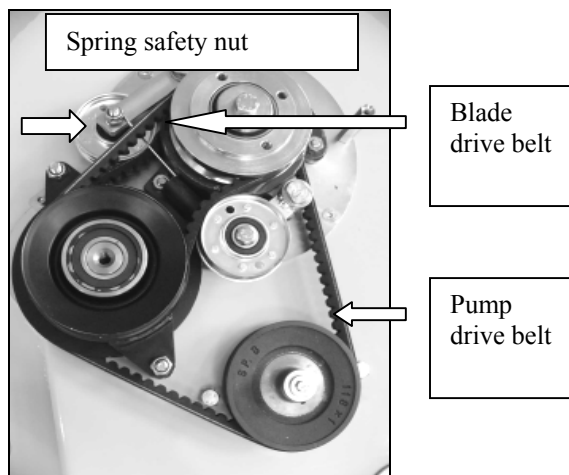


Fig. 43

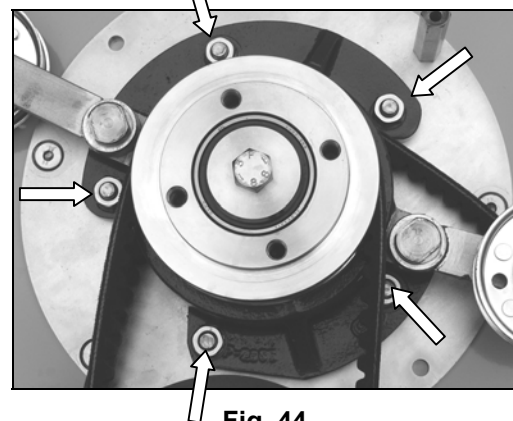


Fig. 44

2.6 Changing the blade hub bracket

- lift the machine or tilt it on the side of the hydraulic

Disassembly: (see [changing the blade drive belt](#))

- Disassemble the blade hub bracket including the tension levers
- Remove the tension levers and pulley
- Remove the bolt securing the blade hub
- Remove the blade hub

Assembly:

- When changing the bearings of the blade hub, apply an adhesive on the bearings (LOCTITE 638)
- Push the blade hub back on
- Clean the pulley pins, lubricate them and use threadlock on the threads (LOCTITE 243)
- Check that the belt is in the centre of the tension pulley (Fig. 46)
- Check that the tension levers and pulleys rotate freely
- Apply an adhesive on the central screw securing the cutter pulley (LOCTITE 243)
- Tighten the screws of the bracket to 70 Nm
- see also [changing the blade drive belt](#)

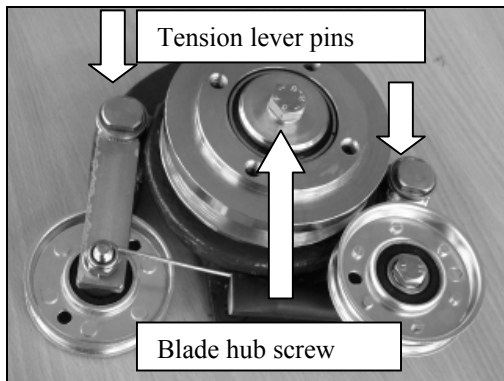


Fig. 45

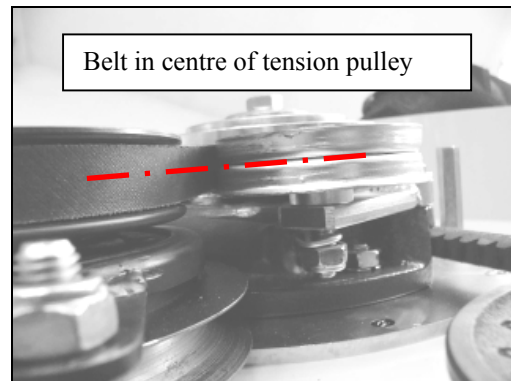


Fig. 46

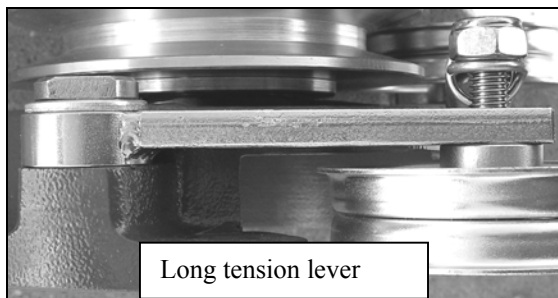


Fig. 47

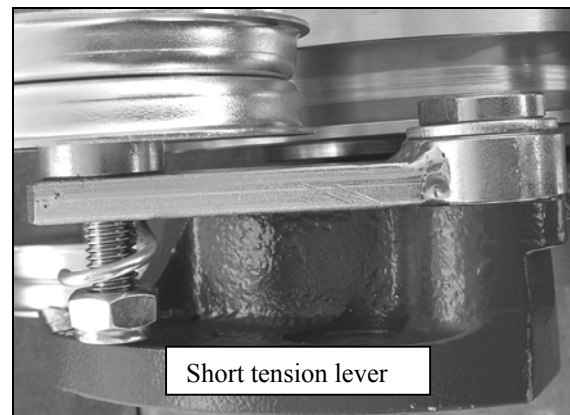


Fig. 48

2.7 Changing the pump drive belt

- Lift the machine or tilt it on the side of the hydraulic tank

Disassembly:

- Remove the cutter blade, clutch cover and blade hub bracket
- Measure the distance (x) of the clutch brake disk (Fig. 49) and note it (approx. 28 mm)
- Loosen the adjusting nut 1 and retaining nut 2
- Remove clip 3, slide off spring 4 and nut 2
- Change the belt

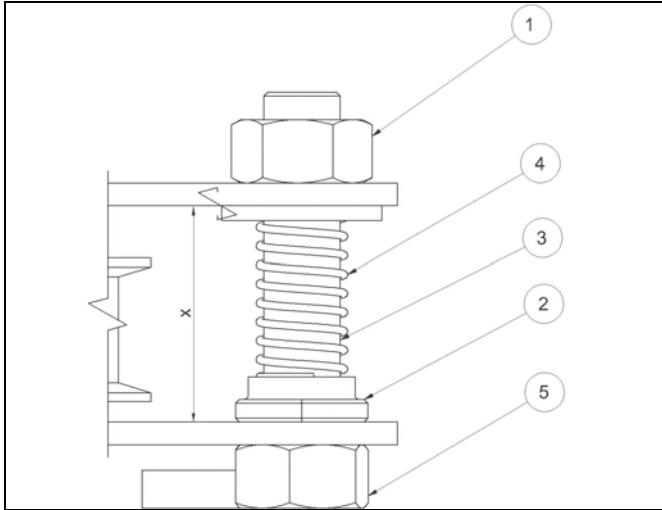


Fig. 49

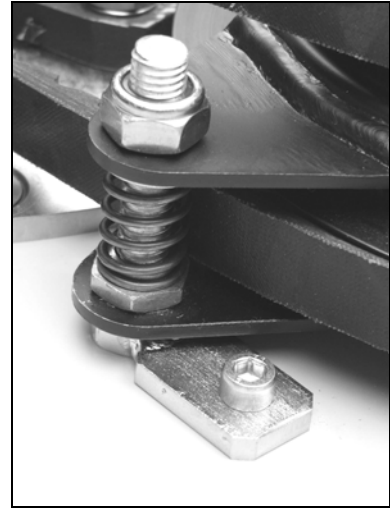


Fig. 50

Assembly:

- Fit the B 1060 GOODYEAR belt
- Gently screw bolt 3 through spring 4 into retaining nut 2 and nut 5, and tighten nut 2
- Tighten the adjusting nut 1 to distance x (Fig. 49)
- Replace the blade hub bracket, the cutter belt and the belt tensioners
- Test that the clutch engages (WITHOUT STARTING THE ENGINE) – both sides of the disc brake must have about 0.5 to 1 mm gap between them on engaging (see also [changing the clutch](#))
- Start the engine and test that the cutter blade engages (WITHOUT ASSEMBLING THE BLADE)
 - on engaging the clutch, the brake must not lock
 - on disengaging, the mechanism must come to a stop within 0.5 sec. (within 5 sec. with cutter blade mounted)
 - on engaging the clutch, the disc brake must not heat up
 - check that both sides of the brake are evenly adjusted
- Check the tightening of the nuts and the belt tension and clearance
- Replace the clutch cover, seal it with silicone sealant and secure the bolts with threadlocker (LOCTITE 243)
- Assemble the blade

2.8 Changing the clutch

Disassembly: ([see changing the pump drive belt](#))

- Disconnect the battery
- Disconnect the clutch cables and the FASTON connector (Fig. 51, Fig. 52)
- Unscrew bolt 1 securing the clutch clip (Fig. 53)
- Unscrew the main clutch bolt 2 (while turning the clutch shaft, screw in the bolt, secure it with a nut from the front side of the clutch and whilst holding this loosen bolt 2) (Fig. 54)
- Remove the clutch (Fig. 54)

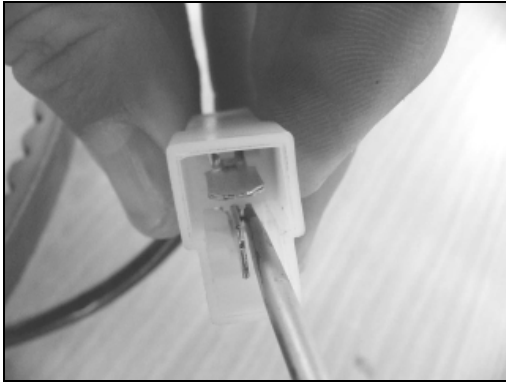


Fig. 51

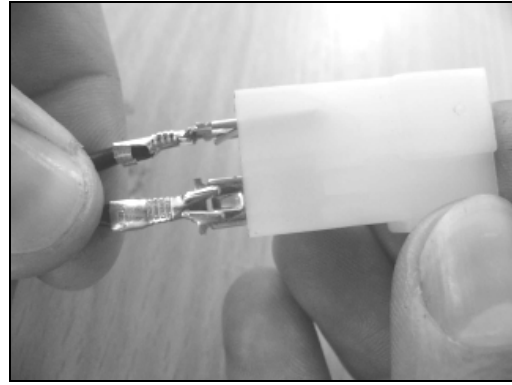


Fig. 52

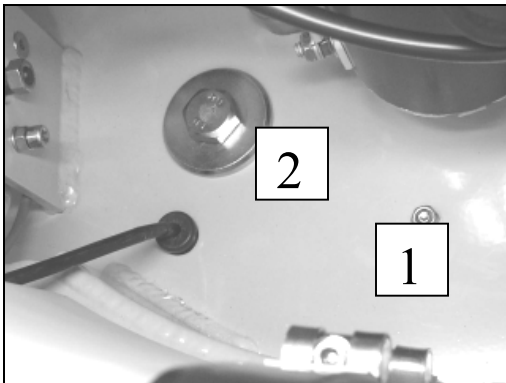


Fig. 53

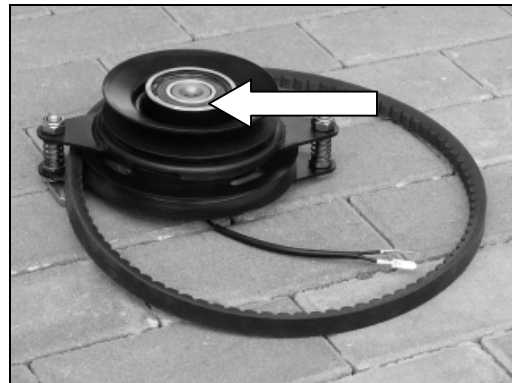


Fig. 54

Assembly:

- Push the clutch input cables through the gap in the frame
- Apply an adhesive and tighten the main clutch bolt
- Tighten the clutch clip bolt and secure it with the locknut

Adjusting the clutch:

- On engaging the clutch, the brake must not lock
- On disengaging, the mechanism must come to a stop within 0.5 sec. (within 5 sec. with the cutter blade mounted)
- On engaging, the disc brake must close by around 0.5 to 1 mm
- On engaging the clutch, the disc brake must not heat up
- Check that both sides of the brake are evenly adjusted

2.9 Changing the engine pulley

Disassembly: (see [changing the blade drive belt](#))

CAUTION!

- Make sure that the locking washer is positioned correctly (facing towards the engine)
- Apply an adhesive on the central countersunk bolt (using LOCTITE 243)

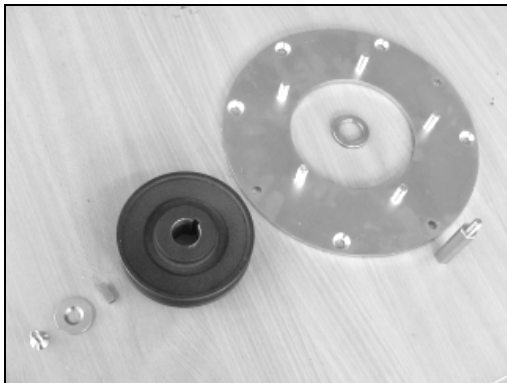


Fig. 55

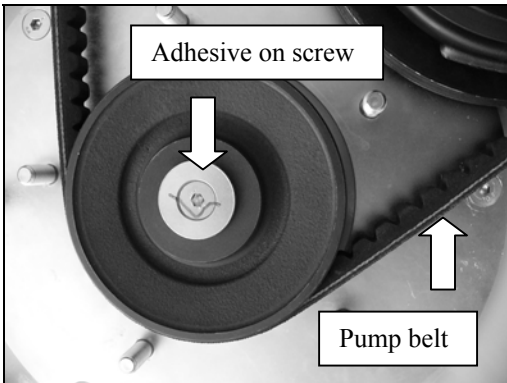


Fig. 56

2.10 Adjusting the pump and blade drive belt tension pulleys

Apply an adhesive on the following:

- The central bolt of the blade hub bracket
- The tension pulley bolt
- The belt pulley bearings
- The pulley bolts in the tension lever

Lubricate the tension pulley pin (Slix – Super Impact)

- Do not tighten the locknut that secures the spring right up to the spring itself – Leave about 1 mm clearance
- Check that the belt is in the centre of the tension pulley (Fig. 57)

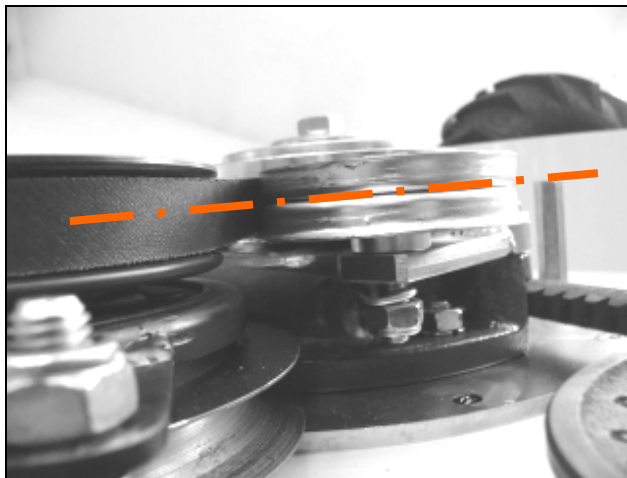


Fig. 57

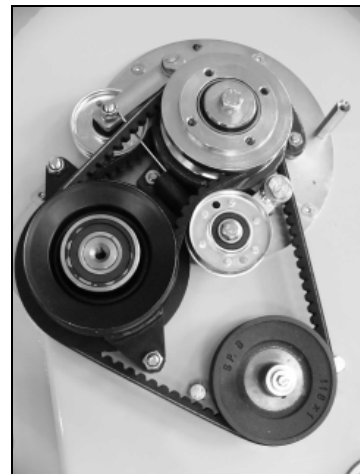


Fig. 58

2.11 Sharpening and changing the blades

Sharpening:

- Sharpen along the length of the blade
- The pitch of the cutting edge should be about 40°
- Sharpen both sides of the blade equally

Balancing:

- Use the special device for balancing the blade (Fig. 61)
- The pin must turn freely in the bearing!!!
- Set the blade on the cylindrical surface of the tool held in a vice (Fig. 60)
- When the rotating blade is no longer horizontal sharpen the heavier side of the blade (Fig. 59)
- When the blade is correctly balanced it will remain horizontal (Fig. 60)
- Bolt torque value: 60 Nm

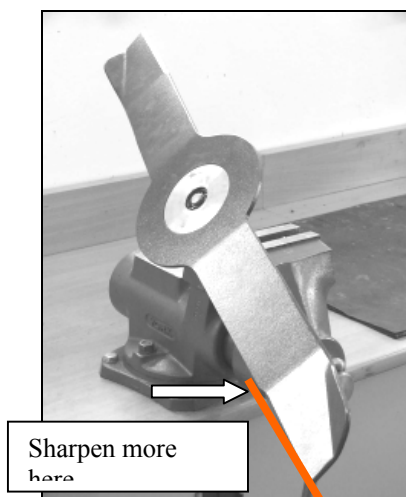


Fig. 59

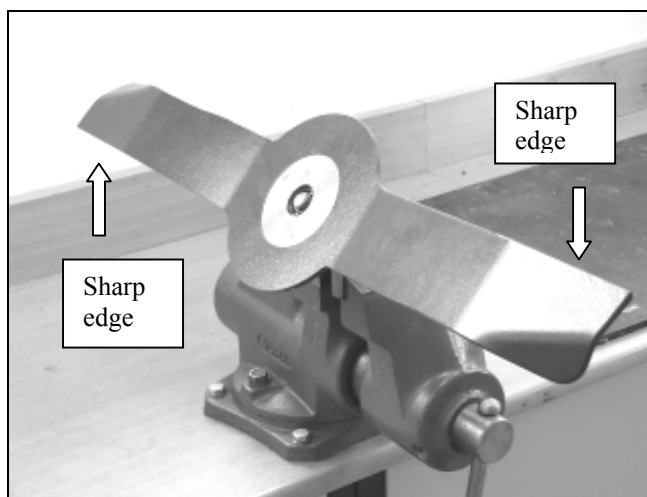


Fig. 60

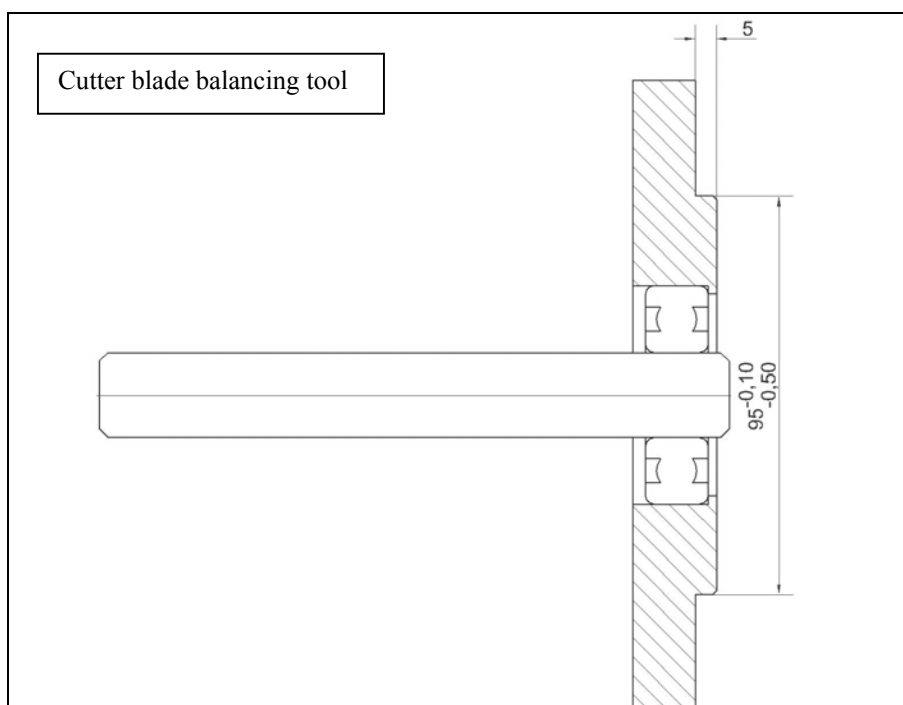


Fig. 61

2.12 Changing the roller chain of the steering

- It may be necessary to change the chain if it is slacked and cannot be tightened any more (when slacking is first noticed it is possible to shorten the chain by one link)

Procedure for changing the chain:

- Lift the machine (wheels off the ground)
- Move the chain round so that the clip is on the side of the steering motor

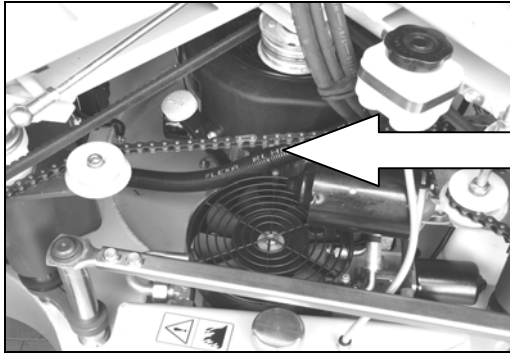


Fig. 62

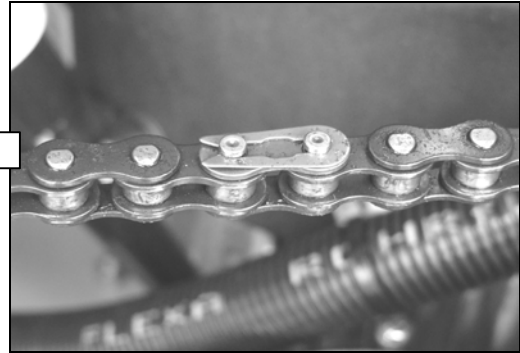


Fig. 63

- Slacken the tension of the chain to the minimum (Fig. 64)
- Disconnect the chain and attach the new chain (roller chain 084-1 * MOFA ½" x 3/16") with a chain link on the free end of the chain (left)

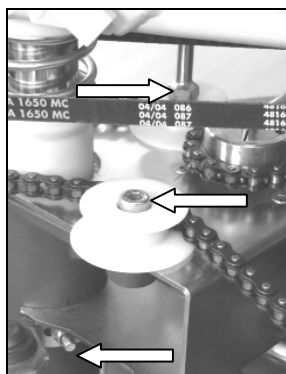


Fig. 64

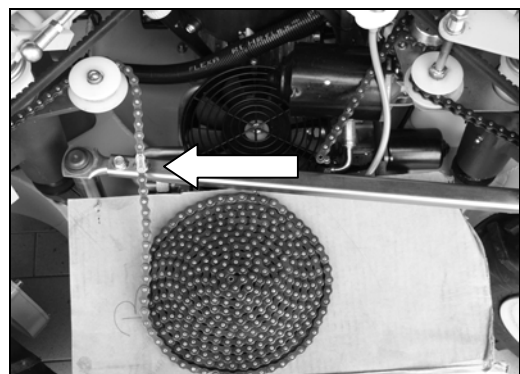


Fig. 65

- Turn the wheels and pull the new chain through in place of the old one (this roughly maintain the wheel alignment)
- Disconnect the old chain and link the new chain together (by securing the clip on the top)
- Check the position of the chain in the guiding pulleys
- Secure the chain (by drawing it on the side of the steering motor ± 20 mm)

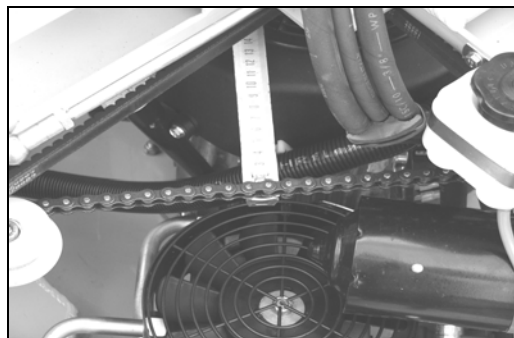


Fig. 66

- Lubricate the chain with a chain spray (see [Lubricants](#))
- Check the wheel alignment (see [adjusting wheel alignment](#))

2.13 Changing the steering motor

- Disconnect the battery
- Disconnect the motor input cables (Fig. 67)
- Loosen the roller chain of the steering
- Disconnect the chain and release it from the motor cogwheel
- Detach the clamping sleeve from the motor shaft (Fig. 68)
- Slacken the motor bolts and replace the motor

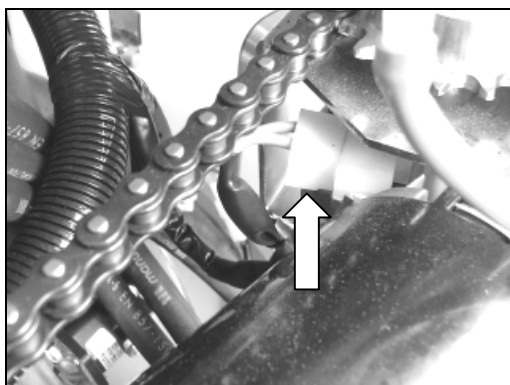


Fig. 67



Fig. 68

Assembly:

- Assemble the clamping sleeve on the shaft so that the chain is in the centre of the tension pulley (Fig. 69)

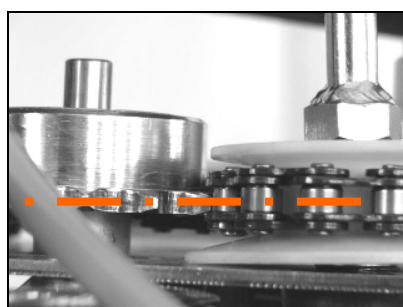


Fig. 69

- Tighten the countersunk screws of the clamping sleeve alternately, up to 10 Nm (CAUTION! Ensure that the spring is positioned correctly)
- Tighten the chain (see [Changing the roller chain of the steering](#))

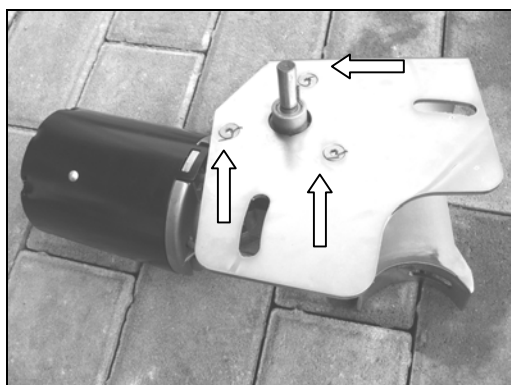


Fig. 70

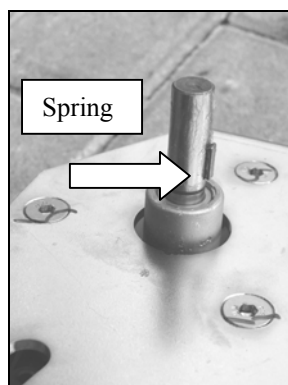


Fig. 71

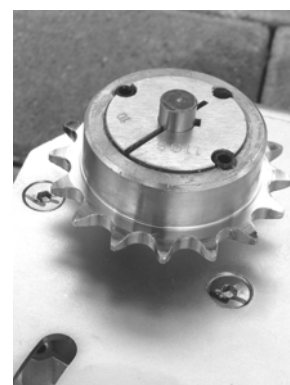


Fig. 72

2.14 Changing the wheel suspension

Disassembly:

- Before disassembly mark the original position of the wheel suspension, bracket and spacer rings
- Lift the machine (the wheels must be at least 150 mm off the ground)
- Turn the suspension so that it is straight
- Disassemble the bracket (see [changing the travel belts](#))
- Remove the pulley
- Support the wheels so that they do not become detached
- Remove the gearing cover on the underside of the arm (CAUTION! This plate secures the wheel suspension) (Fig. 76)
- Pull the wheel suspension off the arm needle bearing

Assembly: (reverse procedure)

- Use an adhesive on the bolts of the gearing cover (LOCTITE 243)
- CAUTION! Do not confuse the different settings of the wheel suspension. They have different pulley shaft lengths. (Fig. 73)
- Keep the wheels aligned (or adjust their alignment after assembly)
- CAUTION! Place the needle bearing protective ring on the arm groove
- CAUTION! Check the different lengths of the spacer rings and brackets (A – short, B – long) (Fig. 74, Fig. 75)
- Lubricate (grease) the needle bearings, pulley shaft and the steering cogwheels
- CAUTION!!! Assemble only by hand – clean and lubricate the shaft and slip it in gently by hand!!!

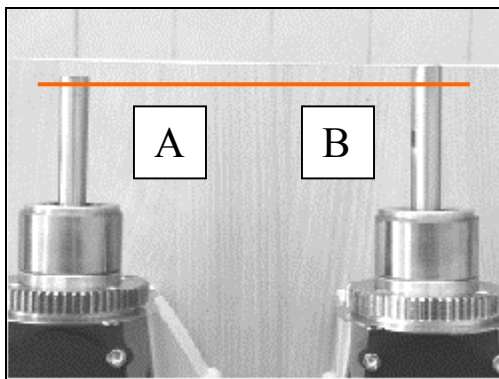


Fig. 73

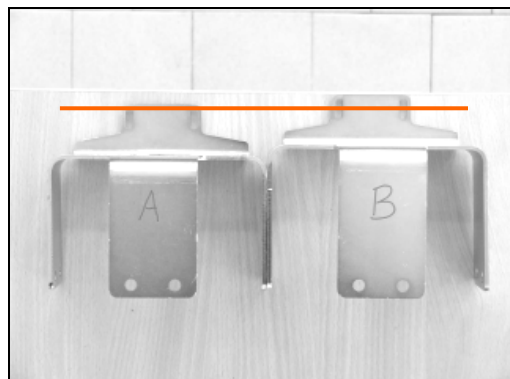


Fig. 74



Fig. 75

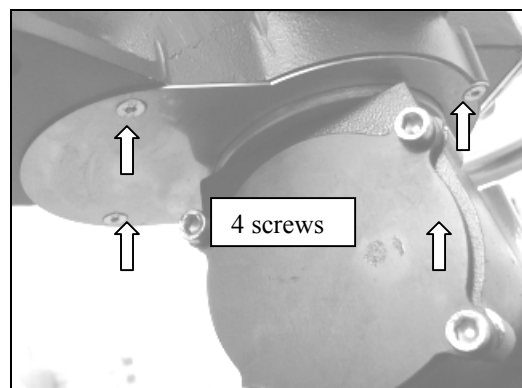


Fig. 76

2.15 Changing the travel belts

Disassembly:

- Lower the setting of the machine to the minimum cutting height
- Lift the machine (the wheels must not touch the ground)
- Disconnect the battery
- Loosen the pump bypass valve (1 – 2 turns)
- Loosen the belt tension pulleys

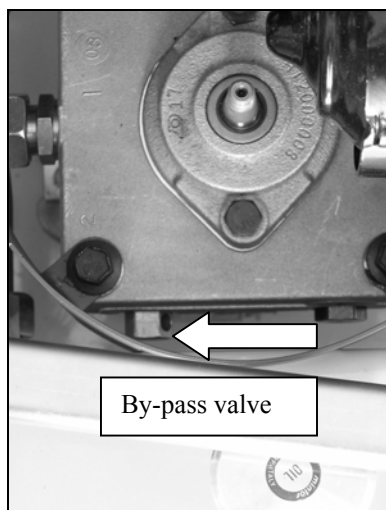


Fig. 77

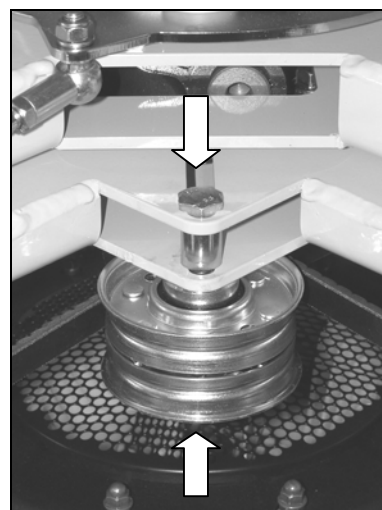


Fig. 78

- After unscrewing bolts 1, 2 and 3 of the bracket (Fig. 81), pull the bracket off the shaft (CAUTION!!! The brackets must not be mixed! MARK THEM)
- Remove the belts from the pulleys
- Disconnect the STOP button, the connector of the DC electric motor, the steering unit, the horn, the antenna, the choke rod, the hydraulic oil overflow hose and the lift rods (of the pinions); the hydraulic hoses may remain connected!
- Remove the stop springs (Fig. 79)
- Remove the screws holding the support and release the support
- Remove the support and the cross welded piece by turning the lifting levers
- Change the SPA 1650 GOODYEAR belts



Fig. 79

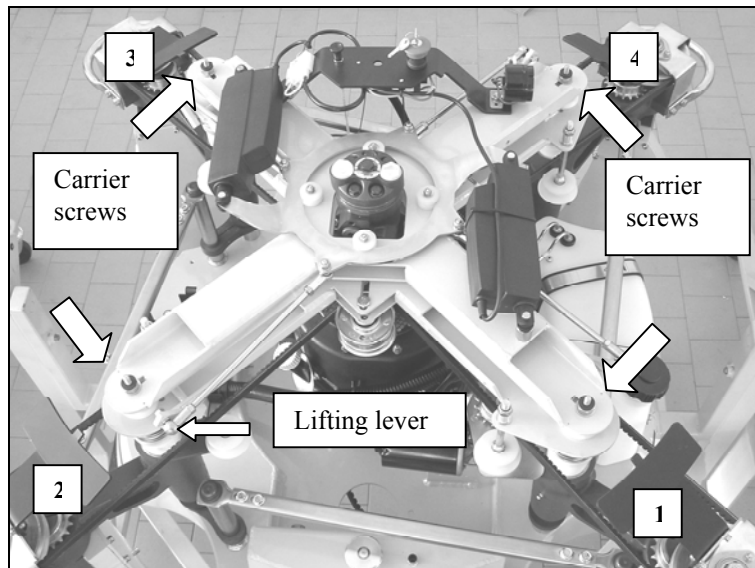


Fig. 80

Assembly:

- Place the belts between the guiding bars and the lift stop clips
- Fit the carrier and cross welded piece onto the guiding bars and the toothed segment onto the guiding bar teeth (first tooth in the first groove)
- Fit the stop springs, lifting rods, choke rod, horn, steering unit, DC electric motor connector, STOP button and antenna cable
- Position the belts onto the pulleys in the following order: 1, 2, 3, 4 (**Error! Reference source not found.**)
- Fit the bracket onto the shaft by hand
- Tighten the screws in the order 3, 2 and 1 (Fig. 81)
- Secure screw 2 with an adhesive (LOCTITE 243)
- Check that the clearance between the transmission and the bar is about 4mm (Fig. 82)
- Check the clearance of the lift rods (they must all pull equally)
- Lubricate the pinions and the cross sleeve (see [Spider maintenance](#))
- Tighten the pump bypass valve

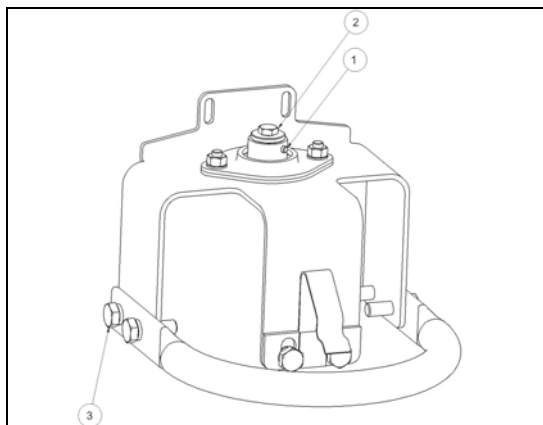


Fig. 81

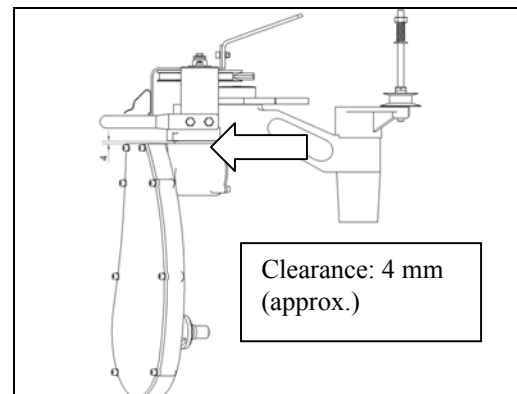


Fig. 82

2.16 Changing the wheel suspension

Disassembly:

- Lift the machine (the wheels must be at least 150 mm off the ground)
- Disassemble the wheel suspension
- Remove the belts and brackets (see [changing the travel belts](#))

- Disassemble the stabilisers
- Slacken the chain tensioner
- Remove the steering clamping sleeve (see [adjusting wheel alignment](#))
- Remove the cross welded piece (see [changing the travel belts](#))
- Slide off the arms
- Remove the pulleys and rods from the ball joint brackets



Fig. 83

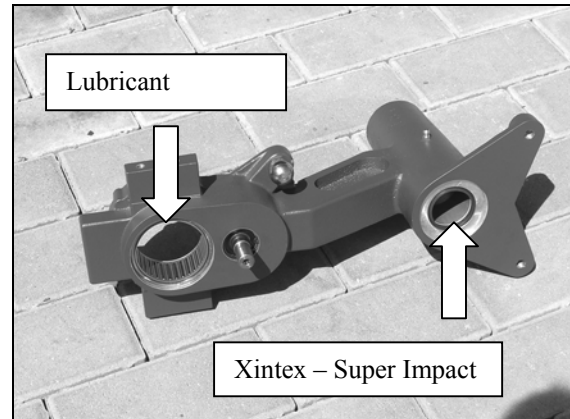


Fig. 84

Assembly:

- Grease the guide sheaths (Xintex – Super Impact) and insert the arms
- Assemble the pulleys on the arms (CAUTION! Check the spacer rings under the pulleys)
- Fit the rod onto the ball joint (warm the stabiliser pin in hot water for around 5 min. and push it onto the ball joint)
- Fit the clamping sleeve onto the steering shaft and tighten it gently (see [adjusting wheel alignment](#))
- Assemble the spring together with the nylon spacer ring
- Place the travel belts between the guide bars and clips of the lift stops
- Assemble the cross welded piece and support (see [changing the travel belts](#))
- Fit the wheel suspension
- Fit the brackets (see [changing the travel belts](#))
- Using a grease gun, lubricate the arms (with Xintex – Super Impact), toothed segment and the guiding sheath of the cross welded piece (with Xintex – Slix), the steering transmission needle bearing with a lubricant (see [Spider maintenance](#))
- Adjust the length of the rods (see [adjusting stabiliser length](#))
- Tighten the chain (see [Changing the roller chain of the steering](#))
- Check the alignment (see [adjusting wheel alignment](#))
- Check the operation, lift and rotation of the machine wheels

2.17 Adjusting the stabiliser length

- Tighten the left side to the minimum length (Fig. 85)
- Slacken the right side so that the arm can be turned slightly (Fig. 86)
- Align the axis of the pulley, the axis of the column and the axis of the hydraulic drive (Fig. 87)
- Tighten the right side of the stabiliser
- Check the clearance between the wheel and the frame (Fig. 88)
- After adjusting the stabiliser length, the tension of the steering chain and the wheel alignment must be checked and adjusted if necessary (see [adjusting wheel alignment](#))

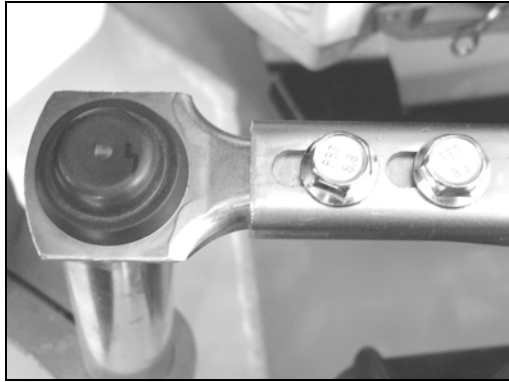


Fig. 85

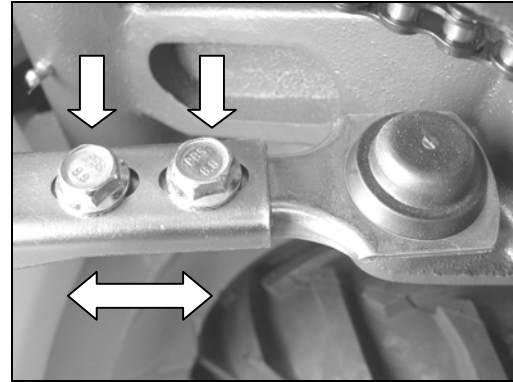


Fig. 86

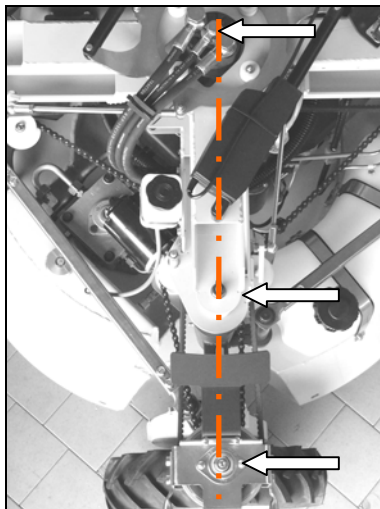


Fig. 87

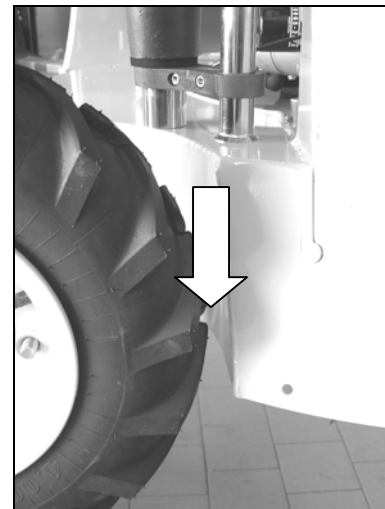


Fig. 88

2.18 Adjusting the wheel alignment

- Lift the machine (the wheels must be off the ground)
- Align the wheels
- Slacken the clamping sleeve of the steering chain
 - Unscrew the countersunk screws 1 (Fig. 89)
 - Tighten one screw into the thread to release the clamping sleeve 2 (Fig. 90)
 - The clamping sleeve is released as the screw is tightened
 - Return the countersunk screws to thread 1 (screw them in but do not tighten them – it must be possible to turn the wheel by hand)
- CAUTION! When turning do not let the screws come into contact with the travelling pulley (Fig. 91)
- Adjust the wheels so that they are parallel. Place a straight board against the portal of the wheels on the left and the disc of the tyre on the right (Fig. 92, Fig. 93)
- Tighten at least one of the (accessible) clamping sleeve screws – the wheels must not be turned before at least one screw is tightened, since this would misalign the wheels!
- After tightening the first screw turn the wheels slightly (CAUTION! The wheels must be off the ground!)
- Tighten the second screw
- Check their alignment with the board
- Alternately turn the wheels and tighten both of the clamping sleeve screws on each wheel until the clamping sleeve is completely tight (23 Nm approx.)

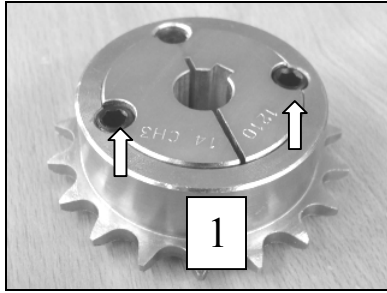


Fig. 89

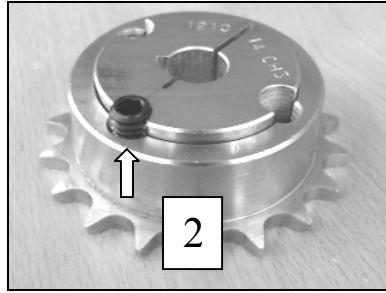


Fig. 90

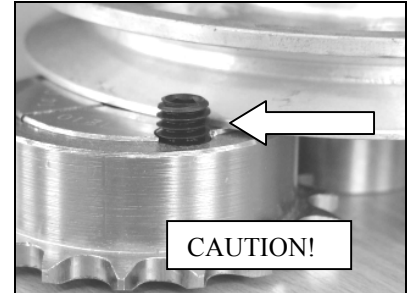


Fig. 91



Fig. 92

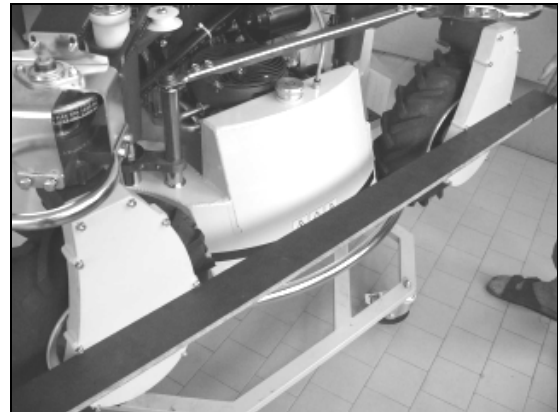


Fig. 93

2.19 Adjusting and changing the wheel drive chain

Disassembly:

- Remove the wheel suspension cap
- Remove the chain tensioning segment
- Remove the small cogwheel from the transmission shaft (Fig. 94) – CAUTION! The spring is tensioned!!!

Assembly:

- Fit the chain onto the chain wheels (roller chain 084-1 * MOFA 1/2" x 3/16")
- Place the spring in the groove of the transmission shaft
- Assemble the chain wheel – tighten the wheel with a screw (longer, around 30 mm); after tightening change this longer screw and take the original screw, and secure it with threadlock (LOCTITE 243) before tightening
CAUTION!!! Do not use a hammer on the small wheel – allow clearance in the transmission!!!
- Fit the tensioning segment and gently tighten screws 2 (Fig. 94)
- Tighten the chain with the adjusting screw 1 (± 5 mm) CAUTION! The rotation must be free!!! (Fig. 95)
- Lubricate with a chain spray
- Tighten the cap (seal with silicone sealant)
- Torque value: 9 Nm

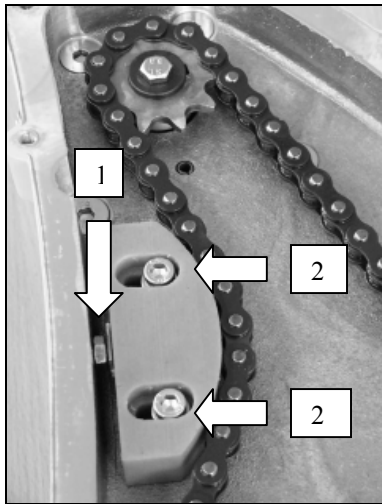


Fig. 94

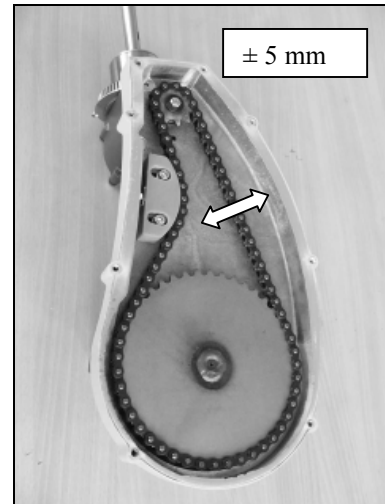


Fig. 95

2.20 Adjusting the lifting rods

- CAUTION! The locknuts have left and right threads!

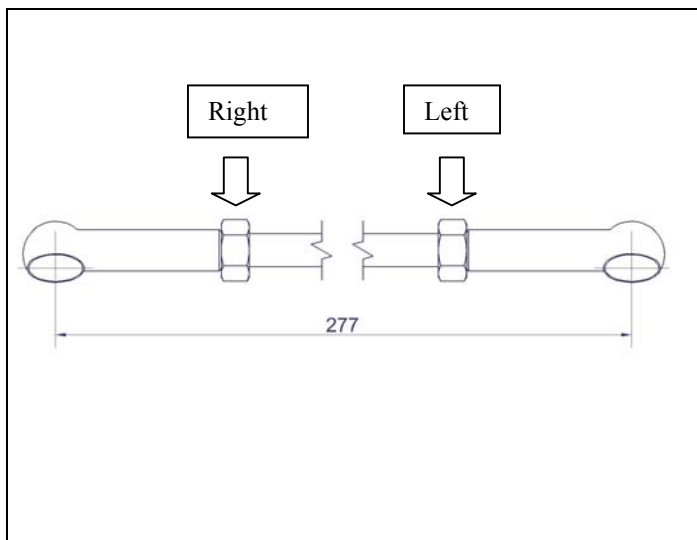


Fig. 96

2.21 Changing the servomotor controller

Disassembly:

- Disconnect the battery
- Disconnect the input cables
- Remove the servomotor lever and the servomotor

Assembly:

- Assemble the servomotor
- Check and if necessary adjust the length of the rod (Fig. 99)
- Fit the rod to the pump lever pin and the pin of the servomotor lever
- Set the shaft of the servomotor and the shaft of the hydraulic pump to the zero (centre) position
- Fit the lever on the servomotor shaft and tighten the locknut
- Connect the wires of the servomotor regulator and the input controlling cables of the servomotor
- Connect the battery
- Turn on the main switch. CAUTION! After turning on the machine main switch, the lever must stop in the central position. If the lever does not stop in the central position but instead goes as far over

as possible, then turn off the main switch immediately! The servomotor may be damaged seriously. Change the polarity of the servomotor input cables and try again.

- Tighten the lever nut (30 Nm)

Adjustment of neutral:

- Support the machine (the wheels must not touch the ground)
- Loosen the servomotor rod locknut (left and right threads)
- Start up the machine. CAUTION! The machine can be started only when the servomotor lever is on the zero (central) position. If it is not on the zero position, turn the lever slightly until the neutral LED lights up on the machine control panel
- Test the travel on both sides and leave it in neutral. The wheels must stop upon returning to neutral from both directions. If they do not, then turn the central nut of the servomotor adjusting rod slowly until the wheels stop in both directions.
- Tighten the safety nut

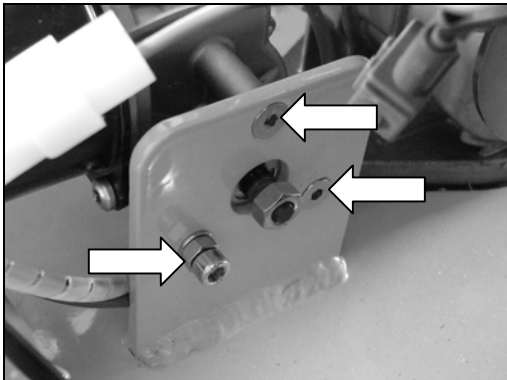


Fig. 97

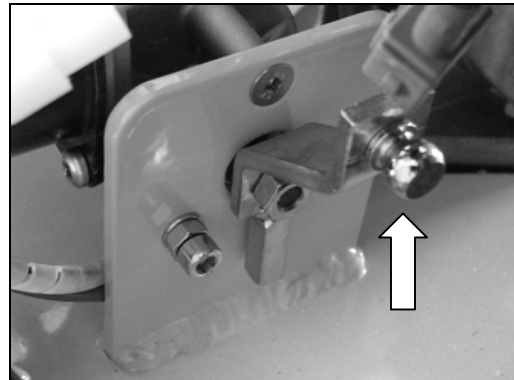


Fig. 98

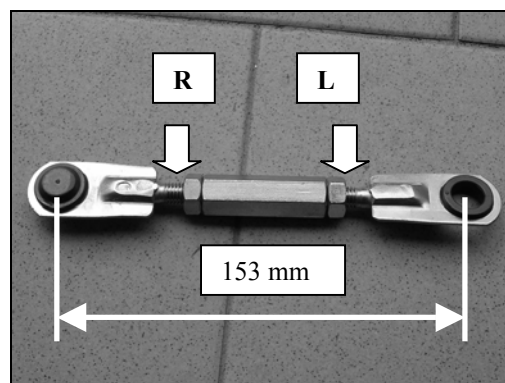


Fig. 99

2.22 Changing the wheel shaft

Disassembly:

- Remove the wheel (three screws fixing the wheel)
- Remove the clamping sleeve (slacken the screws of the clamping sleeve 1 and screw them into the threads for slackening 2 – with even tightening remove the sleeve) (Fig. 100)
- Clean the wheel shaft (must pass through the bearings)
- Remove the cap, tensioning segment, chain and small chain wheel (see [adjusting and changing the wheel drive chain](#))
- Remove the wheel shaft with the chain disk from the bearings
- If necessary change the bearings, remove the safety ring securing the bearings and pull them off

Assembly: (reverse procedure)

- Check the spacer ring between the bearings (Fig. 101)

- Lubricate the shaft
- Clean and degrease the cylindrical surfaces of the clamping sleeve that touch the wheel shaft and wheel hub
- Lubricate the conical surface of the sleeve and screws (even under the screw head) (Fig. 102)
- CAUTION! On fitting the clamping sleeve and wheel hub, allow a clearance of about 1 – 2 mm (Fig. 103)
- Torque value: 10 Nm (the wheels must not slip on the wheel shafts during acceleration)

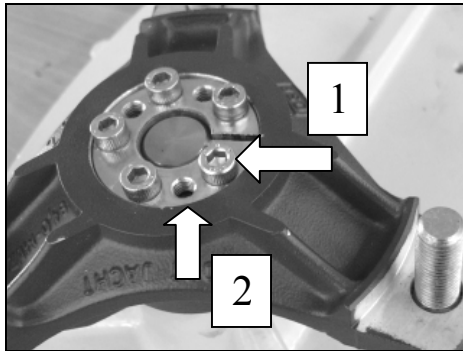


Fig. 100

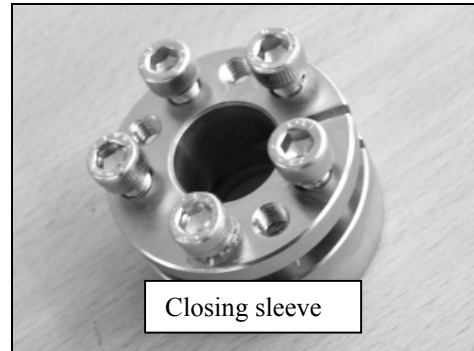


Fig. 102

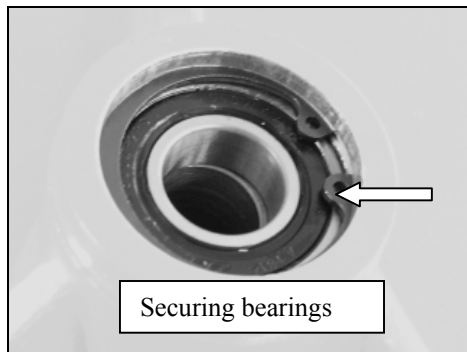


Fig. 101

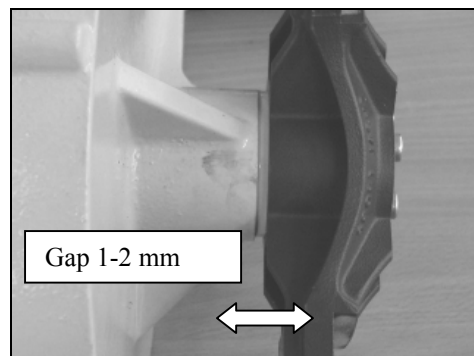


Fig. 103

2.23 Changing the wheel suspension pan

Disassembly:

- See changing the wheel shaft
- Remove the fourth countersunk screw 1 (Fig. 104) and the suspension pan

Assembly: (reverse procedure)

- Clean the contact surface of the pan (Fig. 105)
- Fit the countersunk screws 1 and secure with an adhesive
- Secure the pan – spring clip 2 (Fig. 104)
- Assemble the large chain wheel, clamping sleeve and wheel hub (see [changing the wheel axle](#))
- Assemble the chain and the small chain wheel
- Assemble the tensioning segment
- Tighten and lubricate the chain (see [adjusting and changing the wheel drive chain](#))
- Fit the wheel suspension cap

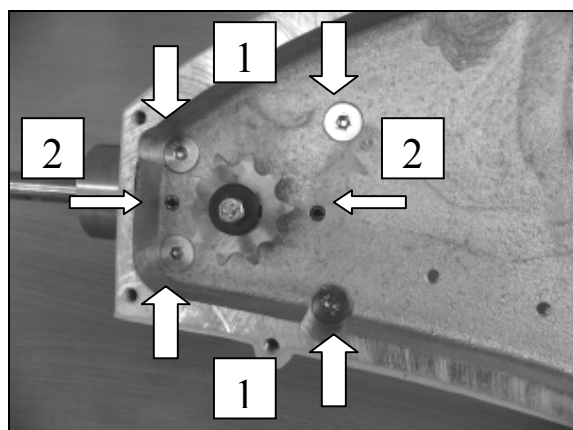


Fig. 104



Fig. 105

2.24 Changing the starter switching relay

- Disconnect the battery
- Remove the relay wires
- When fitting the relay, pin the earth wire of the relay under the screw holding the relay

Check:

- When energising the relay there must be a voltage on both of the relay power terminals
- If there is not, measure the control voltage on the input (brown) terminal. When energising the U starter = 12V
- Relay 12V / LG35 IN LBS

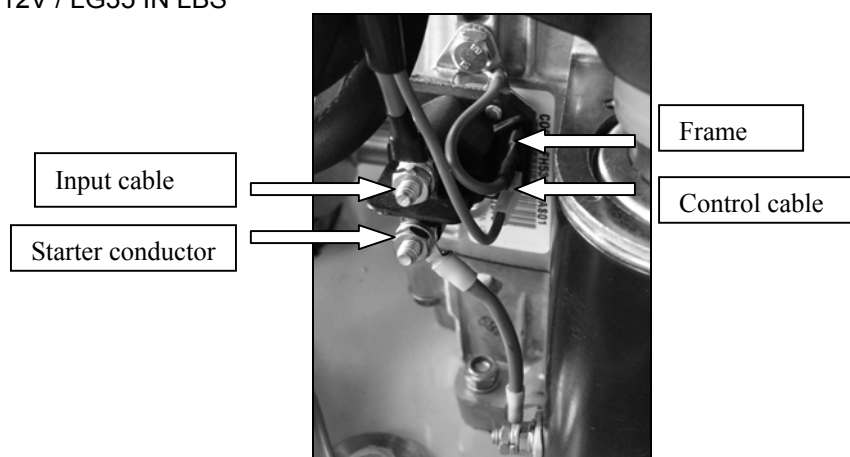
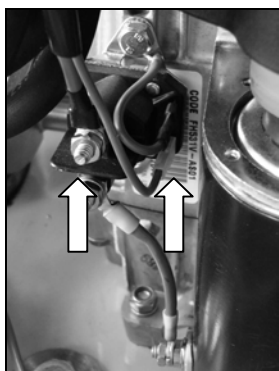


Fig. 106

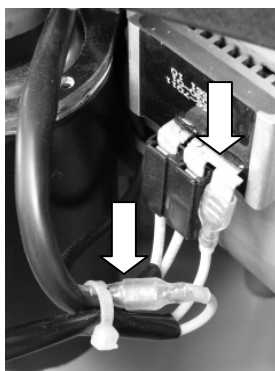
2.25 Changing the main cable harness

Note: The cable harness of the Kohler and Kawasaki motors varies in lengths according to the input wires of the individual pieces of equipment.

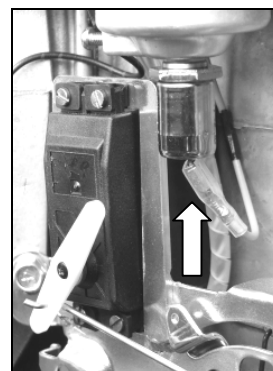
- Disconnect the battery
- Disconnect the junction box from all equipment: the steering unit, fuel control, carburettor solenoid, DC electric motor, STOP button, horn, charging, clutch, travel servomotor, steering motor, starter relay and control panel
- Unscrew the fuse box lid
- Remove the fuse box



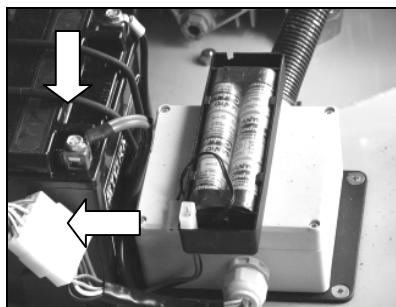
Starter relay (Kawasaki)



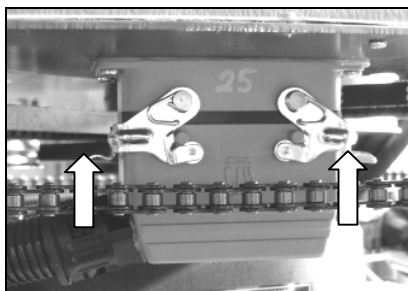
Charging (Kawasaki)



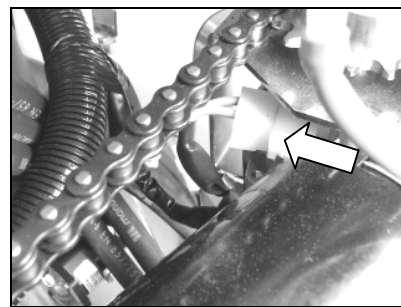
Carburettor solenoid



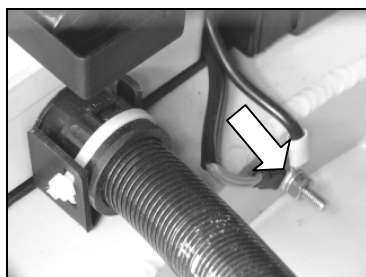
Control panel



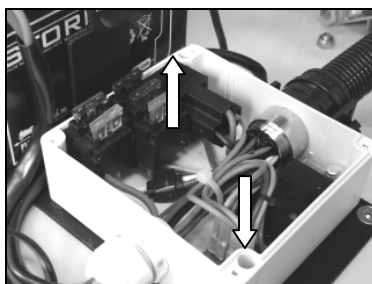
Connector



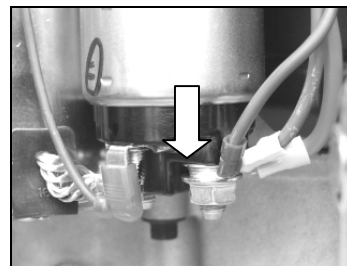
Steering electric motor



Battery earth



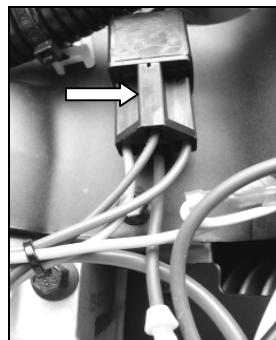
Fuse box



Starter (Kohler)



Charging (Kohler)



Starter relay (Kohler)

2.26 Changing the DC electric motor

Disassembly:

- Set the machine to the minimum cutting height
- Disconnect the battery
- Loosen the input cables
- Remove the DC electric motor and replace it (CAUTION! Ensure that the motor is facing the right way!)

Assembly:

- CAUTION! Check the colour code of the input cables and their position within the connector!!! (The motor may be damaged seriously when the connection is wrong!!!) (Fig. 107)

H	M	
H	M	



	B	C
	B	C

Fig. 107

H – Brown
M – Blue
B – White
C – Red

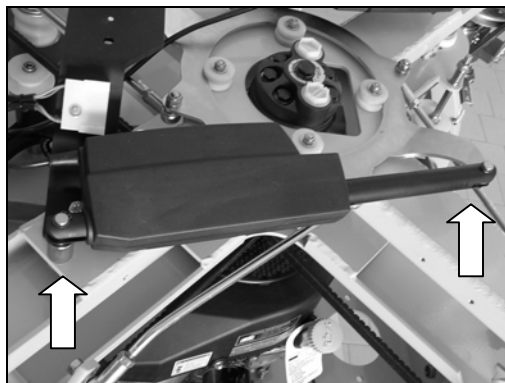


Fig. 108

2.27 Replacing the fuses

- The fuse box is located beside the accumulator
- The diagram shows the individual systems and the position of the fuses inside the fuse box

1. 10 A – Control panel, carburettor solenoid
2. 15 A – Steering unit, travel control, machine lift
3. 20 A - Steering servomotor
4. 30 A – Main fuse
5. 20 A – Charge of accumulator, blade clutch

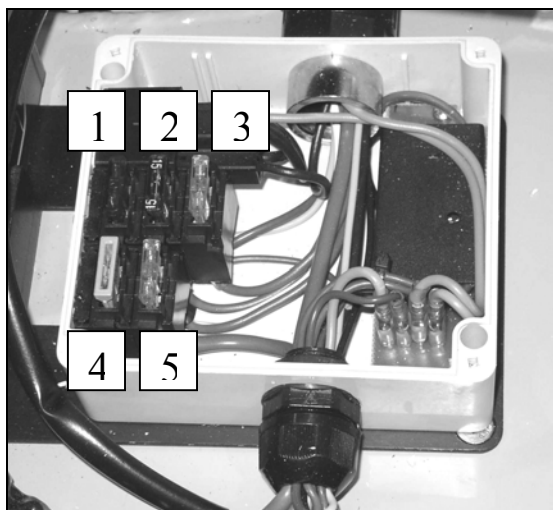


Fig. 109

When replacing fuses always respect their current value. Do not replace faulty fuses with fuses with a lower or higher current value. In either case this may cause considerable damage to the machine and cause fire!

2.28 Carburettor maintenance

- Adjustment of idling revs – screw 1 (Fig. 110 –Kohler motor, Fig. 111 –Kawasaki motor)
Min. revs Kawasaki – 1,500 r.p.m.
Min. revs Kohler – 1,500 r.p.m.
- Adjustment of maximum (operating) revs – screw 2
Max. revs Kawasaki – 2,700 r.p.m.
Max. revs. Kohler – 2,650 r.p.m.

Note: Kawasaki motor: Increase to maximum revs by moving the fuel control bracket up (Fig. 112 – max. revs (Kawasaki), Fig. 114)

- Drain plug of carburettor (seasonal maintenance – draining dirt from float chamber)

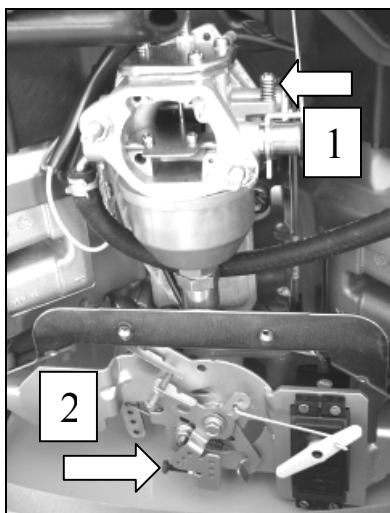


Fig. 110 - Kohler

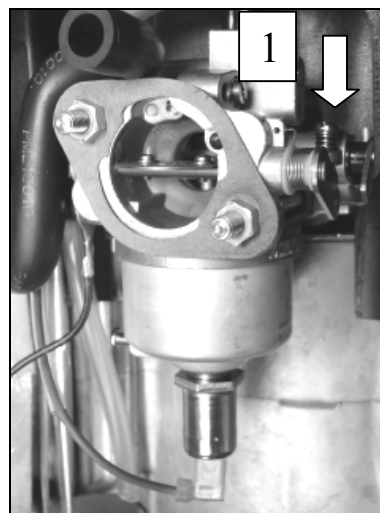


Fig. 111 - Kawasaki

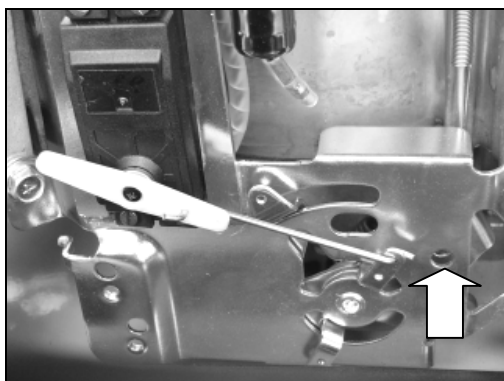


Fig. 112 – max. revs (Kawasaki)

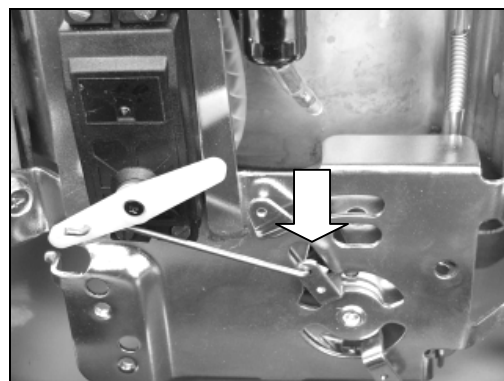


Fig. 113 – min. revs (Kawasaki)

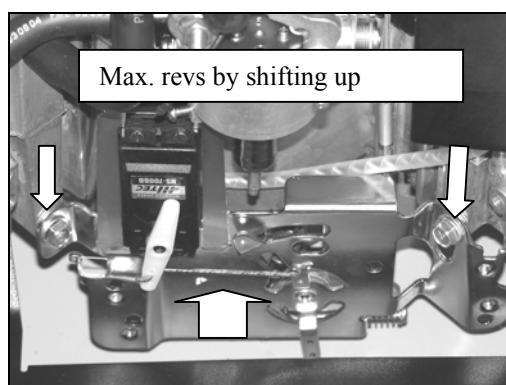


Fig. 114

Lubricants

Xintex - Slix (universal lubricant – spray) –water-resistant, non-sticky surface

Xintex – Super Impact (highly durable insoluble lubricant)

Grease (Plastic lubricant)

Chain spray

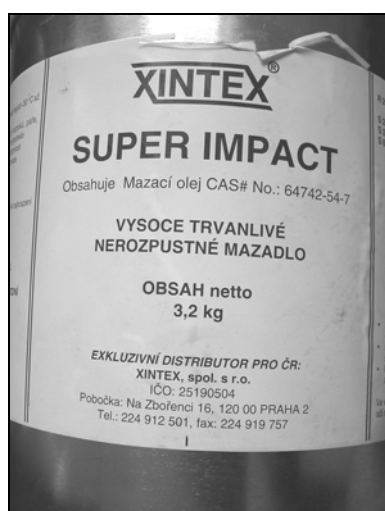


Fig. 115



Fig. 116

Service tools

Block for lifting the machine (150 x 130 x 80)

Block for tilting the machine (950 x 50 x 50)

Straight bar for adjusting the wheel alignment (length 1,300 mm) [Adjusting wheel alignment](#)
Hub for balancing the blade [Sharpening and changing the blades](#)
Tool for loosening the engine oil filter [Changing the engine oil filter](#)
Spanner for loosening the hydraulic oil filter [Changing the hydraulic oil filter](#)